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FOR THE YEAR
1953

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THE LONDON NATURALIST

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Editorial.

WE gratefully acknowledge the receipt through the Royal Society of a grant of £30 from the Scientific Publications Grant-in-aid towards the cost of publishing the papers by Dr. G. Beven and Mr. D. F. Owen in the *London Naturalist*, No. 32.

We are pleased to publish this year the first part of a survey by Baron de Worms of the distribution of moths in the London Area. It is hoped that this paper will be continued next year.

The South-West Middlesex Group has begun an ecological survey at Cranford Park, and a preliminary Progress Report is included in this issue. Members of the Group who may be newcomers to natural history will find it useful to take part in this activity, and in ecological work there is room for everybody to contribute observations which will help to build up the complete picture of the area being studied.

We are greatly indebted to the Nature Conservancy, and in particular to Miss Balme and Dr. Macfadyen, for contributing the report of the Conservancy's activities in our area which appears on page 80.

An attempt has been made in this year's *London Naturalist* to secure uniformity in plant nomenclature on the basis of the new *Flora of the British Isles* which all botanists will be using.

Criticism has been voiced that the *London Naturalist* contains too few papers of interest to the general member. We must, of course, retain our function of recording the work done by the different sections of the Society, but in addition the Editor would welcome contributions of popular interest from members, especially in the form of short notes. Obviously the contents of the *London Naturalist* are determined in the first place by the range of papers submitted for publication, and your Publications Committee would be pleased to see more competition for the available space.

A Note on Dragonflies as Prey of Spiders.

By A. E. LE GROS.

BRITISH records of dragonflies as prey of spiders are few and, indeed, Bristowe (1941) has expressed his belief

“that dragonflies are captured seldom by spiders, and the large species never (except possibly at the time of transformation by a spider such as *Dolomedes fimbriatus* Linn. or in the nymph stage by *Argyroneta*)”.

I have felt for a long time that an exception should be made with regard to the spider *Araneus cornutus* Clerck. This medium-sized spider spins its large orb webs on plants in damp situations—in marshes and by the margins of ponds and streams—and having in mind its abundance in such habitats and the relative strength of its webs I stated (1951) that the frailest dragonflies might form at certain times of the year an appreciable part of the spider's diet.

I have on occasions noticed *Enallagma* and *Agrion virgo* (Linn.) as prey of *Araneus cornutus*; Bristowe's records (op. cited) of dragonflies as prey of spiders all relate to *cornutus* as the spider; and I suspect that Miss Longfield's record (1949) of *Pyrrhosoma nymphula* (Sulz.) as a victim of 'spiders frequently' is also referable to this species.

Unlike the common orb-web spiders *Araneus diadematus* Clerck and *Meta segmentata* (Clerck) which spend most of their time by day at the centre of their webs, *Araneus cornutus* Clerck prefers to remain in a silken cell or 'retreat' which it constructs close to the web. This retreat is dome-shaped, open below and constructed in the head of a plant. Sometimes the tip of a *Sparganium* leaf is drawn over in the shape of an inverted U and silk is spun across the edges of the loop. The retreat, in contrast to the web which is renewed at regular intervals, sometimes daily, is used by the spider for several weeks and eventually may become the receptacle of the egg cocoon.

Debris from the spider's meals tend to accumulate on the outside walls of the retreat, and in an examination of thirty-one of these retreats spun on *Sparganium* leaves at Isle of White Pond, Bookham, on the 9th August 1953 I found dragonfly wings on six retreats. Miss Longfield, to whom I sent these wings, identified them as belonging—with one exception—to the species *Lestes sponsa* (Hansemann) (1 ♀ 10 ♂♂). Of the males eight were adult, one teneral and one subadult. The exception was a subadult *Sympetrum striolatum* (Charp.). Miss Longfield pointed out to me that the *Lestes* has the habit of flitting between reed stems, and is likely in consequence to blunder into webs stretched across the reeds.

It will be realized that all but one of these records refer to Zygopterids and I have found by experiment (using specimens of *Coenagrion puella* (L.)) that these slender dragonflies have great difficulty in freeing themselves when trapped by the web of *cornutus*. Similar experiments with larger dragonflies (*Sympetrum* spp.) revealed that their violent struggles quickly damaged the webs and the insects were able to break clear. A noticeable feature of these experiments was that whereas the weak struggles of the *Coenagrion* usually induced the spider to leave its retreat and attack the dragonfly, the violence of the *Sympetrum* met with no response from the spider.

I think that further observations will show that large numbers of the Zygopterids fall prey each year to this spider. One or two other species of spiders spin orb webs near water—in particular, *Tetragnatha extensa* L.—but I have not yet observed dragonflies trapped in their webs. It is possible that *Tetragnatha* webs—which are spun at night to catch Nematocerous flies—lack the strength of *cornutus* webs.

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Seaweed Flies in North-west London.

By C. H. ANDREWES, F.R.S.

DURING November and December 1953, flies of the genus *Coelopa* appeared in numbers in the laboratories of the National Institute for Medical Research, Mill Hill. Altogether more than a hundred were seen and all those examined were *Coelopa frigida* Fln. I caught the first on November 6th; the last on December 30th.

The building stands, six storeys high, on a ridge with extensive views both to the north and south. One *Coelopa* was found amongst a mass of flies trapped in the filter of the air-intake of the ventilation system: others were seen on the outside of windows on the fifth floor.

These flies are well known to be attracted to chloroform and other organic solvents. It is therefore of interest that most were found in the organic chemistry laboratories; next most affected was the biochemical division. One worker told me that they were particularly abundant when chloroform was being used; the flies then fell into the solvent in numbers.

Coelopa frigida also turned up in the laboratories of the Common Cold Research Unit at Salisbury, Wilts, during December: some dozens were seen.

Neither at Mill Hill and the neighbourhood nor at Salisbury have I seen any *Coelopa* in dwelling-houses; all were in laboratory buildings.

List of Presidents, 1914-1953.

IT is twenty-one years since we published a list of Presidents of the Society. The following list of those who have held this office covers the years since the London Natural History Society was formed by the amalgamation of the City of London Entomological Society and the North London Natural History Society.

1914	L. B. Prout, F.E.S. (dec.).	1932-1933	Miss C. E. Longfield, F.R.G.S., F.R.E.S., F.Z.S., M.B.O.U.
1915-1919	E. A. Cockayne, M.A., D.M., F.R.C.P., F.R.E.S.	1934-1936	J. E. S. Dallas (dec.).
1920	R. W. Robbins (dec.).	1937-1938	C. L. Collenette, F.R.G.S., F.R.E.S.
1921-1924	E. B. Bishop (dec.).	1939-1945	J. B. Foster, B.A.
1925-1927	S. Austin, F.Z.S.	1946-1948	L. G. Payne, F.Z.S. (dec.).
1928-1929	W. E. Glegg, F.Z.S., M.B.O.U. (dec.).	1949-1951	L. Parmenter, F.R.E.S.
1930-1931	L. J. Tremayne, F.Z.S.	1952-	J. H. G. Peterken, F.L.S.

Post-War Progress in Nature Conservation in the London Area.

By C. P. CASTELL, B.Sc.

A report on "Nature Conservation in the London Area" appeared in the *London Naturalist* in 1947 (1). It provided a summary of the more recent views and work on Nature Conservation, a report on the work and recommendations of the Society's Nature Reserves Committee, and a glance at some of the problems to be considered if the recommendations were to be carried out. The report was presented to the Society in the form of a lecture in May, 1946 and, for publication, revised up to the middle of 1947. An annotated list of existing and proposed nature reserves and conservation areas appeared as an Appendix, with the approximate boundaries and sites shown on a sketch map of the London Area. This report was issued as Reprint No. 40, but has been out of print for some years.

The present report attempts to summarise progress since 1947 and is followed by a revised list of sites of importance to the naturalist in the Society's Area (i.e., within a radius of 20 miles from St. Paul's Cathedral).

The London Area Nature Conservation Committee.

By the end of 1945, the last of the reports and maps had been prepared by the Committee and sent to the national Nature Reserves Investigation Committee (N.R.I.C.) for the use of the Ministry of Town and Country Planning. Beyond the preparation of the Committee's Nature Conservation Report for publication in the *London Naturalist*, little was done until August 1947, when the Committee held its final meeting and drew up a final report for submission to the Society's Council, offered its resignation and suggested the formation of a permanent and stronger committee. A sub-committee of the Council, representing the Sections and the Chingford Branch, met on March 1st, 1948, and recommended the formation of a standing Nature Conservation Committee of seven members to be appointed by Council, with power to act on behalf of the Society and to be chosen on a regional rather than on a sectional basis, but to include a geological representative. It also recommended the appointment of local observers, from as many districts of the Society's area as possible, to investigate and keep watch for any threat to the natural history of the areas recommended and to supply reports to the Committee on objects of natural history worthy of conservation in the area or areas under observation.

After reporting to Council on October 28th, 1948, on the proposed personnel for a new permanent Nature Conservation Committee, Mr C. P. Castell was asked to convene a meeting, which took place on January 28th, 1949. At this first meeting of the reorganised Committee, Miss C. E. Longfield was elected Chairman, Mr. Castell secretary, and the following agreed to act as County Representatives: S. Cramp, Miss H. Franks, K. Hoy, W. D. Melluish and R. M. Payne.

Composition of the Committee from 1949 to 1954.

Chairman: Miss C. E. Longfield, 1949 onwards.

Secretary and representative for geology: C. P. Castell, 1949 onwards.

County Representatives:

Essex—K. Hoy, 1949; R. D. Weal, 1950-1951; R. M. Payne, 1952 onwards.

Hertfordshire—W. D. Melluish, 1949-1953; E. H. Warmington, 1954.

Middlesex and Buckinghamshire—S. Cramp, 1949 onwards.

Kent—Miss H. Franks, 1949-1951; K. H. Hyatt, 1952 onwards.

Surrey—R. M. Payne, 1949-1950; E. W. Groves, 1951 onwards.

Annual Reports for the years 1950 onwards have appeared in the *London Naturalist*, to which the reader is referred to further details.

The principal task of the Committee has been the compiling of more detailed reports on the recommended areas for the use of the Nature Conservancy. Reports were completed, and sent to the Conservancy, on Middlesex and Buckinghamshire in 1950, Essex and Hertfordshire in 1951, Surrey in 1952, and Kent in early 1953. Although these reports are as detailed as the County Representatives have been able to make them from available information, they are, in most cases, by no means adequate. A body of local observers has still to be built up.

The Nature Conservancy.

Mention was made, in the Society's 1947 Report, of the appointment of the Wild Life Conservation Special Committee of the Ministry of Town and Country Planning in August 1945, whose report (2) was published in July 1947, while the *London Naturalist* was in proof. The report recommended the setting-up of a Biological Service and a Nature Conservation Board and listed 73 proposed National Nature Reserves. This report was published at the same time as that (3) of the National Parks Committee, appointed in July 1945.

These two reports led to the most important event in nature conservation in this country—the passing of the National Parks Act in December 1949 (4) and the inauguration of the Nature Conservancy.

The Nature Conservancy was established under Royal Charter (March 1949), acting under the direction of a Committee of the Privy Council, the Lord President of the Council being the Minister responsible to Parliament. Its functions as summarised in the Charter are: “To provide scientific advice on the conservation and control of the natural flora and fauna of Great Britain; to establish, maintain and manage nature reserves in Great Britain, including the maintenance of physical features of scientific interest; and to organise and develop the research and scientific services related thereto” (6).

The Chairman was Sir Arthur G. Tansley, F.R.S., who was succeeded by Mr. A. B. Duncan in 1953, and the Director General was Capt. C. Diver, C.B., C.B.E., succeeded in 1953 by Mr. E. M. Nicholson, C.B.

Part III (Sections 15-26) of the National Parks and Access to the Countryside Act, 1949, was devoted to Nature Conservation. The term Nature Reserve was defined; the Nature Conservancy was empowered to enter into agreement with owners and occupiers of land for the establishment of nature reserves and given powers of compulsory acquisition; Bye-laws for the Protection of Nature Reserves were framed; Section 21 empowered Local Authorities to establish and manage Nature Reserves; Section 23 states that it is the duty of the Nature Conservancy to inform Local Planning Authorities of Areas of Special Scientific Interest.

The Conservancy has issued Schedules of Nature Conservation Areas for each county, primarily for the notification of local planning authorities, and the Society has been provided with a set of those for the Home Counties.

Three types of areas are recognised in the schedules:—

1. *National Nature Reserves*, which it is proposed to set up under the terms of Sections 16-20 of the Act. Until such time as it is possible to declare these as Nature Reserves, they are notified under Section 23 of the Act. They are numbered in a national series. The original list of proposed reserves comprised between 70 and 80 in England and Wales, excluding those of purely geological interest, and the total is considered by Sir A. Tansley (5) as unlikely to reach 100.

2. *Sites of Special Scientific Interest [or Importance]** scheduled under Section 23 of the Act, but not at present proposed as National Nature Reserves. They are numbered in relation to the 1 : 25,000 map sheets on which they occur. As Sir A. Tansley points out (5), "while the Act lays on the Conservancy the duty of notifying local planning authorities of areas considered to be of special scientific interest, but gives them no further powers in regard to such areas, the National Parks Commission may make orders in respect of areas of outstanding national beauty, but before they come into force, the orders have to run the gauntlet of local criticism and to face the possibility of the Minister refusing to confirm them. It is thus clear that a real power of preventing any kind of nature conservation, outside National Parks and National Nature Reserves, lies with local opinion and with the Minister." However, there is some satisfaction to the naturalist in the knowledge that these areas cannot be developed without previous consultation with and the approval of the Ministry of Town and Country Planning. At 30th September 1953, 1098 such sites had been notified to local planning authorities in England (7).

3. *Additional Areas* recommended for preservation, but not scheduled under Section 23 of the Act, but numbered and lettered on a similar system.

In addition to the above categories, the term *Recommended Area* is used, in the appended list, for those areas recommended by the

*These areas are termed Sites of Special Scientific Interest in the Act and in the Reports of the Nature Conservancy, but the term Sites of Special Scientific Importance is used in the Conservancy's Schedules.

Society, but not yet placed by the Conservancy in their schedule for the notification of local authorities.

The letters and numbers after each area are those used in the Society's Nature Conservation files and in the previous published report. They are followed, where applicable, by the Nature Conservancy's reference number and by P.O.S. (Public Open Space).

In this list, the notes on each area have been reduced to a minimum. It is hoped to publish more detailed accounts of some of the areas in future years.

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3. ——, 1947. Report of the National Parks Committee (England and Wales). Cmd. 7121. H.M.S.O.
4. National Parks and Access to the Countryside Act, 1949.
5. TANSLEY, A. 1953. The Conservation of British Vegetation and Species. in Lousley, J. E. (Ed.). *The Changing Flora of Britain*. The Botanical Society of the British Isles, pp. 188-196.
6. The Nature Conservancy, 1953. Report of the Nature Conservancy for the Period up to 30th September 1952. H.M.S.O.
7. ——, 1953. Report of the Nature Conservancy for the year ended 30th September 1953. H.M.S.O.

Appendix : List of Nature Reserves, Bird Sanctuaries and Sites scheduled or recommended for their special interest to the Naturalist.

County of London.

EXISTING BIRD SANCTUARIES.

St. James' Park, Green Park, Hyde Park, Kensington Gardens, Holland Park (M.10), Primrose Hill, Regents Park, Greenwich Park, Woolwich Common, Stoke Newington Reservoir.

EXISTING NATURE RESERVE.

Abbey Wood (part) (N.R.3) (P.O.S.). A daffodil area and a small pit in highly fossiliferous Blackheath Beds have been fenced off and maintained as a nature reserve by the L.C.C.

ADDITIONAL AREA.

Highgate Woods (M.8, 51/28/A) (P.O.S.).

RECOMMENDED AREAS.

Ken Wood (M.9) (P.O.S.). Good for birds—the sand-pit (G.18) shows a good section of the Bagshot Sands.

Sand-pit, Hampstead Heath (G.19) (P.O.S.). Good section in Bagshot Sand.

Lessness Abbey Wood (K.1) (P.O.S.). The site of valuable published ecological work (includes N.R.3).

Plumstead and Erith Marshes (K.9). The huge area of reeds is the last breeding stronghold, so near London, of many interesting birds, and the sub-maritime flora is worthy of preservation.

Charlton Sand Pit (G.23). The best section in the London district for the Lower Tertiary sequence. Recommended as a National Geological Monument by the N.R.I.C.

Pit near Church, Eltham Common (G.24). Shows Claygate Beds and London Clay.

Cemetery Brickfield, Plumstead (G.25). A section in Pleistocene, Blackheath Beds, Woolwich Beds and Thanet Sand.

Tuff and Hoar's Pit, Wickham Lane, Plumstead (G.26). A section in Blackheath Beds, Woolwich Beds, Thanet Sand and Upper Chalk.

Essex.

EXISTING BIRD SANCTUARY.

King George V Reservoir, Chingford, Walthamstow Reservoirs.

SITES OF SPECIAL SCIENTIFIC INTEREST.

Epping Forest (E.1, TQ/39/1) (P.O.S.). This remnant of the once extensive Forest of Waltham still provides a good variety of habitats, including oak, beech and hornbeam woodland, with much holly undergrowth, some open stretches of heath, bracken and birch scrub and grassy and rushy places on the lower ground. The trees were mostly pollarded until the Epping Forest Act of 1878, which has resulted in much natural regeneration. The forest supports the only remaining pure herd of black Fallow Deer in Britain. This area was formerly on the Nature Conservancy's list of proposed National Nature Reserves and has been removed from it only because of the difficulty of setting up a reserve under the terms of the National Parks Act, 1949, over land designated for public open space. These woodlands are still considered to be of national importance from the scientific point of view and are much used for biological studies by schools, colleges and natural history societies.

The Roding Valley (E.10, TQ/49/2). From Chigwell to Passingford Bridge, including Chigwell Sewage Farm and Luxborough Pond. Old permanent pasture and water meadows flank the river, which is an important migration route for a variety of birds and a breeding ground for others, including Kingfisher and Reed-Bunting. Some interesting aquatic plants have survived river widening.

Curtismill Green (E.11, TQ/59/2). A wild area of damp woods and marshes of a type now rare in Essex, supporting interesting plants and a very rare insect.

Navestock Park (E.13, TQ/59/3). Although not a wild area, the park contains many native plants and the large lake is fringed with a good marsh vegetation; the area is well-wooded and bird-life is abundant and varied.

Grays Thurrock Chalk Pit and Beacon Hill, Purfleet (E.19, TQ/67/1).
The only outcrop of chalk in S. Essex. In spite of its urban surroundings, this old pit is the home of a surprising number of uncommon plants.

Gaynes Park and Ongar Park Wood (E.12, part, TL/40/2). A fine stretch of mixed woodland, now partly opened up, where there is a great variety of wild life, from Badgers and Redstarts, rare and local insects to uncommon marsh plants.

Lion Pit, Grays Thurrock (G.21) (TQ/57/1). One of the last remaining exposures of the Late Middle (Taplow) Terrace of the Thames gravels, with Levallois flint implements, as well as the Thanet Sands with the Bull Head Bed.

Orsett Road Pit, Grays Thurrock (G.51) (TQ/67/2). A classic pit in the highly fossiliferous deposits of the Middle (Taplow) Terrace of the Thames gravels.

Globe Pit, Grays Thurrock (G.52) (TQ/67/3). One of the last remaining exposures of fossiliferous Brickearth, part of the Thames Middle (Taplow) Terrace.

ADDITIONAL AREAS.

Thorndon Park, Hartswood and Scrub Hill, Brentwood (E.15, TQ/68/A). Open oak-wood and heath on Bagshot Beds with interesting birds and insects and some local plants.

RECOMMENDED AREAS.

Great Parndon Wood (E.2) to include Hudgells and part of Epping Long Green—for plants and birds.

Nazeing Common and Gally Hill woods (E.3) for mammals and birds.
Much now ploughed up and recommendation withdrawn.

The Lea Valley (Walthamstow Reservoirs and Lammas Lands, Sewardstone Gravel Pits, Waltham Abbey Marshes, etc.) (E.4-6). The whole of the Lea Valley within our area is of outstanding ornithological interest, mainly because it is a migration route and because of its many reservoirs. It includes areas of intricate watercourses and small woods supporting a heronry and interesting mammals and marsh birds. The reservoirs already rank as bird sanctuaries.

Gilwell Park, Sewardstonebury, High Beach, Copped Hall, Warlies Park and Debden Green (E.7-9). Recommended for preservation primarily as a protective zone to Epping Forest.

Coopersale Common and Beachet Wood (E.12 part). Supports a rich marsh and aquatic flora with several rarities.

Weald Park (E.14). An area of old parkland with extensive wooded areas, coniferous plantations, bracken areas and lakes supporting a varied and interesting fauna and flora.

Ingrebourne River and Berwick Pond, Upminster (E.16). Recommended for its aquatic plants and birds.

Romford Sewage Farms, Dagenham and Rainham (E.17, 18). Areas rich in birds, especially waders on passage.

The Mardyke Valley (E.20) from Purfleet to Stifford. The water meadows on either side of the Mardyke are recommended for their birds. Bulphan Fen was formerly included but has been drained and is now arable land.

Hangman's Wood, Grays (E.21) (P.O.S.). Recommendation withdrawn.

West Thurrock Marshes (E.22). Much has been filled in, but an excellent salt marsh flora with characteristic and some rare species occurs near Stone Ness and merits preservation.

Hainault Forest (E.23) (P.O.S.). An area of open woodland and grassland with ponds with interesting insects and rare and local plants.

Shenfield Brickyard (G.20). A good section in the Claygate Beds.

Little Thurrock Gravel-pit (G.22). A classic fossiliferous deposit of the Middle Thames Terrace Gravels.

Hertfordshire.

PROPOSED NATIONAL NATURE RESERVES.

Water End Swallow Holes (G.13, N.R.48). The best group of swallow holes in S.E. England; of great geological and physiographical interest.

Wormley Wood (H.9, N.R.49). An excellent representative of the South-eastern Sessile oak-hornbeam wood with the associated flora and fauna characterised by an abundance of sedges. The Essex and Hertfordshire oak-hornbeam woods are of a distinctive woodland type, not occurring elsewhere and the preservation of a good example is of great importance.

SITES OF SPECIAL SCIENTIFIC INTEREST (P.O.S.).

Lees Wood and Jacotts Hill, Watford (H.1 part, TQ/09/3). A varied area of wood and parkland with a good avifauna.

Bricket Wood and the Colne Valley (H.4-5, TQ/19/1). The Bricket Wood area is one of the best examples of varied primitive scrub successional to oak-hornbeam woodland; it has been fully described and analysed and its preservation is needed for continuing its study. The woodland is very rich in bird and insect life. The site includes the R. Colne and its water meadows, an area rich in bird life. A brick pit (G.8) shows Chalky Boulder Clay with derived Jurassic fossils.

Aldenham Reservoir (H.6, TQ/19/2). Although this sheet of water was artificially created in the first place, it has now been colonised by a number of unusual plants and the bird population is large and interesting. The western margin should be enclosed and public access prohibited.

Newberries Park Pit, near Radlett (G.12, TQ/19/3). A nearly unique exposure of the Hertfordshire Puddingstone seen in places at the base of the Reading Beds.

ADDITIONAL AREAS.

Hamper Mill; Brightwells and stretch of R. Colne (H.2, TQ/09/A).

Includes flooded gravel pits, the whole area is good for bird observation.

The Ver Valley and the Moor Mill Gravel Pit (H.12, TL/10/A). An area where intensive observations have been made on the rich bird life.

Totteridge Ponds (H.13=M.6, TQ/29/B). Contain interesting aquatic plants.

RECOMMENDED AREAS.

Cassiobury Park and Whippendell Wood (H.1) (P.O.S.). An area of oak, beech and mixed woods, river and canal with some rare woodland plants and a good woodland and aquatic avifauna.

Oxhey Woods (H.3). Originally recommended as a good example of oak-birch wood with extensive colonies of bluebells and a typical woodland bird fauna, but it has lost its value through the development of the L.C.C. housing estate over much or most of the area.

Panshanger Park (H.7). Includes river, lake, osier beds and fine mixed woods. Good for woodland and aquatic birds.

Roxford Copse, near Hertingfordbury (H.8). A site for the Winter Aconite (*Eranthis hyemalis*).

Cuffley Great Wood (H.10). An area of mixed and varied woodland intersected by streams with birch-heath, oak-hornbeam wood. There is a good and varied flora and a long list of breeding birds.

Nyn Park and pond at foot of Judges Hill, Northaw (H.11). For birds and rare aquatic plants.

(It would be desirable to link up these two areas by Well Wood.)

Mill End Pit, Rickmansworth (G.4). A section in gravel of uncertain age.

Moor Park (G.5). Gravel pit just inside the Batchworth Heath gate showing large foreign boulders.

St. Michaels Bridge, St. Albans (G.6). Large block of Puddingstone by roadside.

Pit at Potterscrouch, St. Albans (G7). Section in Upper Chalk containing Paramoudral Flints.

Watford Heath Brickfields (G.9). Section in fossiliferous London Clay Basement Bed, Reading Beds and Chalk. Pit now completely filled in and recommendation withdrawn.

Crooklog Brickfield, Watford (G.10). Showed London Clay, Basement Bed and the Clay facies of the Reading Beds.

Paddock Wood Brickfield or Grover's Brick Pit, Watford (G.11). Puddingstone *in situ*. Now completely filled in and recommendation withdrawn.

MIDDLESEX.

EXISTING BIRD SANCTUARIES.

Bushy Park, Hampton Court Park and Gardens and the following reservoirs: Staines, Queen Mary (Littleton) and Hampton.

EXISTING NATURE RESERVE.

Ruislip Reservoir (N.R.9). 13 acres at the north end have been declared a nature reserve by the Ruislip-Northwood U.D.C.

SITES OF SPECIAL SCIENTIFIC INTEREST.

Staines Moor (M.13, 51/07/1). Valuable for aquatic birds.

Denham, wood opposite St. John's Covert (M.16, 51/08/2). Alder wood with damp woodland ground flora and a good selection of the associated birds.

Harefield Moor, including the copse by the church (M.1, 51/08/1). An extensive area of marshy land with a rich marsh and aquatic flora and several interesting and rare plants in the woodland portions. The size of this area makes it especially valuable as a home for marsh-loving birds. A representative selection of the flooded gravel pits, frequented by aquatic birds, should be preserved from dumping. The area includes the *Harefield Chalk Pits* (G.15) which provide the only section in Middlesex showing an accessible sequence of beds from the Upper Chalk to the London Clay. The section also shows evidence of a platform of marine erosion in the bored surface of chalk.

Ruislip Reservoir (M.2, 51/08/3). A good area of woodland and a home for many aquatic birds. If the northern end of the reservoir could be railed off to prevent access by boats, it could readily become a bird sanctuary and the biological interest of the whole area would be further increased. Part of the north end has recently been declared a local nature reserve (N.R.9) but still requires fencing.

Osterley Park (M.15, 51/17/1) (P.O.S.). A habitat for some uncommon plants and interesting birds.

Syon Park (M.14, 51/17/2). The riverside reed beds, now rare in this region, provide a home for aquatic birds.

Perivale Wood (N.R.1, 51/18/1). This relic of native oakwood has been preserved as a bird sanctuary for many years amongst industrial surroundings. It has been very little visited or disturbed, and so long as it can continue undisturbed, it will provide a valuable breeding and foraging area for birds which also frequent the other open areas of the district, such as Horsenden Hill. Moreover its wild condition makes it important for scientific observation and there can be few or no other areas like it in the whole London district. It is under the management of the Selborne Society.

Brent Reservoir (M.11, 51/28/1). A good area for marsh and water-plants and for aquatic birds. The north area is the best part and if it were possible to prevent the access of boats to the water north of Cool Oak Lane Bridge, the natural history of the area would be further improved.

Whitewebbs Park (M.7, 51/39/1) (P.O.S.). Wildwood and area to south, including New River, Enfield. This includes an area which is already maintained by Enfield U.D.C. as a nature reserve (N.R.2), not at present intended for designation as a Nature Reserve as dealt with in Sections 16 to 20 of the 1949 Act; the additional area around this will serve as a protective zone and is also valuable for its woodlands and aquatic habitats.

ADDITIONAL AREAS.

Horsendon Hill (M.12, 51/18/A) (P.O.S.) and undeveloped area north of canal. A good example of a typical London Clay flora with associated mammals and birds

Harrow Weald Common (M.3, 51/19/A) (P.O.S.) with Grim's Dyke and fields between common and golf course. Good oak and oak-birch woods.

Stanmore Common (M.4, 51/19/B) (P.O.S.) with The Grove and area including ponds to north. Oak-birch woods, one of the best botanical areas in the county, especially for marsh and aquatic species.

Scratch Wood (M.5, 51/19/C) (P.O.S.) and adjacent open ground. An excellent example of a London Clay flora, including some rarities with a good woodland bird fauna.

RECOMMENDED AREAS.

New Year's Green Sand-pit, Harefield (G.16). Good section of lower part of Reading Beds.

Castle Lime-pit, Potter's Bar (G.17). Excellent section of Upper Chalk-Tertiary (Lower Reading Beds) junction showing good "piping", and a key section in understanding the Water End Swallow-holes, Herts. (G.13).

Buckinghamshire.**RECOMMENDED AREAS.**

Black Park and Langley Park (B.1 and B.2) for woodland birds, deer and lepidoptera.

Chalk-pit, West Hyde, near Harefield (G.14). Section in Upper Chalk showing pipes.

Iver Heath Pit (G.1). Section shows Peat on Sand and Gravel of uncertain age.

Manston Lane Gravel-pit, Iver (G.2). Type section of the Iver Stage of the Thames Terrace Gravels.

Brickworks, Langley (G.3). Good section in Brickearth of Taplow Terrace Age.

Kent.**SITES OF SPECIAL SCIENTIFIC INTEREST.**

Dryhill Pit, near Sevenoaks (G.56, 51/45/1). A section in fossiliferous Hythe Beds exhibiting sharp folding.

Keston Common (K.3, part, 51/46/1) (P.O.S.). The Common contains one of the best bogs in the London Area with many interesting plants; it is famous because Darwin studied the insectivorous plants growing there.

Downe Bank (K.4, part, 51/46/2). Another area made famous by Darwin's researches. It includes areas of very old grassland with a wealth of plant species and is valuable for studying the stages in colonisation by Beech trees.

Joyden's Wood near Bexley (K.10, 51/47/1). A fine example of the type of oakwood found on the more acid soils of Kent; the area is rich

in ferns, mosses and liverworts, birds and insects, especially lepidoptera.

Rock Pit, Elmstead Woods (G.30, 51/47/2). This pit shows the pebbly sands of the Blackheath Beds which are here rich in fossils. It is highly valuable for research and teaching.

Greenhill Wood, Otford (K.11, 51/55/1). An area with a rich flora and steep grassy slopes unusual in character through the abundance of mosses.

Dunstall Wood, Shoreham (K.12, 51/56/2). A good example of Kentish chalk grassland rich in plants and characteristic summit beech woods.

Preston Hill, Shoreham (K.13, 51/56/3). An interesting area of scrubland on chalk.

Magpie Bottom, Shoreham (K.14, 51/56/4). A small area of botanical interest.

Farningham Wood (K.15, 51/56/5). An oakwood, much of it old coppice, with a rich ground flora.

Knockmill Pit, Kingsdown (G.53, 51/56/6). A pit in Blackheath pebble beds which yields flints in a rare chemical state.

Wansunt Pit, Dartford (G.29, 51/57/2). Shows a loam-filled channel in High Thames Terrace gravels.

Knockhall Chalk Pit, Swanscombe (K.16, 51/57/3). This, with Whiting Chalk Pit, harbours an interesting selection of plants and because of its damp floor has a number of fen species.

Barnfield Pit, Swanscombe (G.54, 51/57/4). A famous site in the Boyne Hill Terrace stage of the Thames gravels, which has yielded many human implements as well as the Palaeolithic Swanscombe skull.

Whiting Chalk Pit, Swanscombe (K.17, 51/57/5). Similar to Knockhall Chalk Pit (51/57/3).

Baker's Hole, Swanscombe (G.55, 51/57/2). At this site Coombe-Rock overlies a floor on which are found Palaeolithic (Levalloisian) implements.

ADDITIONAL AREAS.

Pilot's Wood and Hog Wood, Kingsdown (K.18, 19, 51/56/A & B). Useful areas of semi-natural woodland with uncommon plants.

Darenth Wood (K.20, 51/57/A). An area on the transition between Eocene sands and Chalk, with a corresponding variety of vegetation.

RECOMMENDED AREAS.

Hayes Common (P.O.S.), with *Barnett and Brook Woods* (K.2). An area of oak-birch-heath excellent for birds and insects.

Holwood Park and Downe Golf Course (K.3, part). The area is good for birds and lepidoptera and some interesting bryophytes occur at Holwood Park.

High Elms Park (P.O.S.), *Cuckoo Wood near Downe* (K.4, part), *Jewel's Wood and valley slopes, Cudham* (K.5). Typical beechwood and downland with a rich flora.

Chevening Park, Morants Court Hill and Knockholt Pound Woods (K.6).

Fine beech woods and typical downland with a rich flora; includes the *Knockholt Pound Chalk Pit* (G.31), which shows a good section of Middle Chalk.

Lullingstone Park and the Darent Valley from Brasted to South Darent (K.7 and 8). An area of old oak and beech woods with a large rookery, chalk scrub and downland with a rich flora. The unspoilt river valley is well known to entomologists and ornithologists. Rare plants occur at Chipstead and Farningham. Includes the *Brick Pits at Dunton Green* (G.32), a good section in the Gault Clay.

Ruxley Gravel-Pit, Footscray (K.21). There is a rich breeding bird population and many interesting winter visitors.

Swanscombe Marshes (K.22). The highest unspoilt salt marsh up the Thames.

Two Pits by Slade Green Railway Station (G.27). A good section in the Thames Flood Plain deposits.

Recreation Ground, Crayford (G.28). The section on W. side of the Crayford Brickearth with *Corbicula* bed is a classical site for Pleistocene fossils and flint implements.

Surrey.

EXISTING BIRD SANCTUARIES.

Kew Gardens, Old Deer Park (Richmond), Richmond Park and the following reservoirs: Kempton, Barn Elms, Molesey, Island Barn (W. Molesey) and Lonsdale Road (Barnes).

EXISTING NATURE RESERVES.

Selsdon Wood (N.R.5) (Nat. Trust). Bird and Plant Sanctuary.

Morden Hall Park (N.R.6) (Nat. Trust). Parkland with many watercourses. Bird Sanctuary.

Watermeads, Mitcham (N.R.7) (Nat. Trust). A small area of woodland and meadows by the R. Wandle. Bird Sanctuary.

Sessile Oak, Mickleham (N.R.8). A fine example of *Quercus petraea* scheduled by the Leatherhead U.D.C.

PROPOSED NATIONAL NATURE RESERVE.

Box Hill (N.R.34, S.25c) (P.O.S.). An area of fine native wood and downland flora and fauna, including beech, yew and box (one of its very few indigenous localities) and many rare species.

SITES OF SPECIAL SCIENTIFIC INTEREST.

Norbury Park and Foxbury (S.25b, part, 51/15/3) (P.O.S.). An area with varied scientific interest including the yew wood of Druid's Grove and the site of some rare plants.

Juniper Hall and White Hill (S.25c & d, part, 51/15/4) (part P.O.S.). An area including chalk grassland and woodlands of different kinds including plantations, which is valuable for the relatively large number of rare and uncommon plants.

The Chalk Escarpment from Brockham to Reigate (S.27, 51/15/5). A length of the North Downs escarpment of great biological interest from which it is very difficult to choose smaller areas. It supports splendid beech, whitebeam and yew woods and a fine chalk flora including many orchids. The area includes the *Hearthstone Mine* in Upper Greensand below Colley Hill (G.41).

Fetcham Mill Pond (S.24, 51/15/6). A stretch of water fed from below by "spring pits" of unique character (G.37) with its adjoining fields and watercress beds, it is a haunt of many waterfowl and has several aquatic plants rare in Surrey.

Epsom and Ashtead Commons (S.13, 51/75/7) (P.O.S.). A good example of damp oakwood, with birch and gorse, on London Clay. The area has yielded full and interesting records of birds and insects. The ponds are famous for their dragon-flies and contain some interesting and uncommon plants. A protective belt to the north and Newton Wood should be added to prevent a repetition of the disastrous development to the south.

Arbrook and Esher Commons and Oxshott Heath (S.11, 51/16/1) (P.O.S.). Several types of woodland and heath vegetation are found in this area which is of great value for the teaching of biology and has been intensively studied by naturalists for many years, being a site of pioneer published ecological work. The pine woods have a rich fungus flora; Black Pond and the surrounding area support a fine marsh and aquatic flora and are rich in insect life.

Reigate Heath (S.34, 51/24/1) (P.O.S.). In spite of the presence of a golf course, there is still a good selection of sand-loving plants here and some interesting alder holts and marshes around the margin.

Chipstead Bottom (S.17b, 51/25/3). One of the richest chalk areas in the county and of special botanical and entomological value.

Banstead Downs (S.16, part, 51/26/1) (P.O.S.). An area of chalk vegetation which, considering its nearness to London, has retained a remarkable number of species, several of them rare.

Wimbledon Common and Putney Heath (S.4, 51/27/1) (P.O.S.). In spite of its urban situation, this open space is of the highest interest to naturalists. It has not been grazed for many years and rabbits are few, so that the natural fauna and flora are in some ways more favoured than in more remote places. Intensive studies of almost all types of living organisms have been made there and it is of great importance to London naturalists that no drastic changes should be made in the area. There are good examples of damp oakwood, birch heath and grass heath and the best bog flora near London; there is a rich fauna, especially in birds and lepidoptera.

Quarry Hangers (S.29, part, 51/35/1). A piece of chalk grassland which has remained free from scrub development or heavy rabbit invasion and is little frequented. It differs, therefore, in many details of its plant cover from other generally similar areas in the

region and possesses, perhaps, the healthiest and richest chalk flora near London. The very rare snail, *Helicella elegans*, is abundant in parts of the area.

South Hawke (S.30, part, 51/35/2) (P.O.S.). Probably the best stretch of chalk vegetation in east Surrey and the only British station for one species of plant.

Chelsham Place and Worms Heath (S.32, part, 51/35/3) (part P.O.S.). An area of generally good biological interest, which includes two geologically important sites, Worms Heath and Nore Hill (G.49) which show sections exposing the interesting and much discussed solution pipes of Blackheath beds in the chalk.

RECOMMENDED AREAS.

Banstead Wood, Ruffet Wood, Park Downs (P.O.S.) and Long Plantation (S.17 a.c.d.). An area with a rich and varied chalk flora; a fine beechwood and an oak-pine wood both good for birds.

Farthing Downs (P.O.S.) and Devilsden Woods (S.18). There is still a fair chalk-down flora with some rarities which badly require protection and a rich woodland flora and molluscan fauna.

Riddlesdown (P.O.S.) (S.19). A fair chalk down flora still persists.

Croham Hurst (S.20) (P.O.S.). Shows an interesting range of vegetation through damp oakwood, dry oakwood, oak-birchwood to heath. The Lily of the Valley requires protection.

Selsdon Wood and district (S.21). Part is the existing nature reserve (N.R.5). An oak-hazel wood with many fine beech, ash and yew and a rich woodland floral carpet; the rest of the area is a fine example of natural chalk scrub and is rich entomologically. The existing reserve should be extended to include Haggler's Dean, Featherbed Lane field and downs, and Court, Puplet, Bears and Frith Woods.

Ockham Common (S.22) (P.O.S.). The coniferous woods have a rich fungus flora; Boldermere and the small pond opposite support uncommon reed-swamp and marsh plants.

Bookham Commons (S.23) (P.O.S. Nat. Trust). An area particularly important as the scene of the Society's current ecological survey and of much published work. An excellent example of a London Clay common and damp oak wood with an interesting marsh and aquatic fauna and flora. It is one of the few haunts in the London district of the Grasshopper Warbler.

Fetcham Downs (S.25a). A fine area of chalk downland particularly rich in birds.

The Mole Valley from Boxhurst to Leatherhead (S.25b, G.38). The famous swallow holes of the R. Mole form the best series in Surrey and the Valley shows many interesting geomorphological features. There is a rich riverside flora.

Mickleham Downs (S.25d). An average chalk downland flora, the haunt of the Woodlark and to the north the famous Cherkeley Court yew-wood, one of the finest in Britain.

Headley Heath (S.25e) (P.O.S. Nat. Trust). A typical heath, with some ponds containing rare plants; a good breeding area for birds. The striking contrast of the heath flora and fauna with that of the adjacent chalk make it a valuable area for the biology student. The old gravel pits (G.39) show a section in supposed Pliocene gravels of great interest to the geologist.

Walton and Banstead Heaths (S.26) (P.O.S.). An excellent example of heathland, with small areas of woodland, contains many interesting and some rare plants and many breeding birds.

Gatton Park (S.28). The Lake and ponds are excellent for waterfowl and the site of a heronry. The finely wooded park contains some rare plants.

Escarpmment from Merstham to Marden Park (S.29, part) (excluding Quarry Hangers—S.S.S.I. no. 51/35/1). The area possesses a fine chalk flora and includes the *Hearthstone Mine below Grey-Stone Quarries, Merstham* (G.42) in the Upper Greensand.

Titsey Park, Titsey Woods, Botley Hill and the Oxted Chalk Pits (S.30 part, excluding South Hawke—S.S.S.I. no. 51/35/2). The area contains one of the finest escarpment beechwoods in Surrey, with some rare plants and molluscs and a good bird population. The pit, which is still worked (G.50) shows a good section in Middle and Lower Chalk.

Nutfield Marsh (S.31). A small area formerly rich in rare mints, which may still persist in spite of drainage.

Hallelu Valley, Woldingham (S.32 part, excluding Chelsham Place and Worms Heath—S.S.S.I. no. 51/35/3). The chalk grassland supports a fine flora including many rare species.

Marden Park (S.33). A beautiful estate with typical chalk downland and beechwoods. The area is rich in bird life, especially during autumn migration.

Gravel Pit, Coombe Warren (G.33). The best section of the Glacial Gravels of S.W. London.

Sim's Brickfield, Coopers Hill, near Claygate (G.34). A section in Bagshot Sands, Claygate Beds and London Clay; the type exposure of the Claygate Beds.

Welch's Brickfield, Claygate (G.35). The section shows folding in the Claygate Beds.

Fairchildes Pit, Farleigh (G.36). A section in fossiliferous Upper Chalk, rich in polyzoa.

Headley Court Chalk Pit (G.40). A good section in the *marsupites* zone of the Upper Chalk.

Greystone Quarries, Merstham (G.43). A good section in the Lower Chalk.

Pit at South Merstham (G.44). A good section in Brickearth and in Folkestone Beds.

Pit at South Merstham (G.45). The section shows the junction of the base of the Gault with the Folkstone Beds.

Fullers Earth Quarries, Nutfield (G.46-48). Good sections in this interesting local development of the Sandgate Beds.

Cranford Park Survey.

THE Survey was commenced in March 1953 by the South West Middlesex Group of the Society, its object being to give members experience in the study of ecology and of recording what they see.

The Park, a public open space, lies north of the Bath Road, Cranford, and covers an area of approximately 150 acres, consisting of marshy woodland, meadowland, the River Crane and an ornamental lake.

ORNITHOLOGY by A. Anderson, M.D., D.P.H.

The following birds were found to be nesting in the Park:—Jay, Magpie, Green Woodpecker, Blue Tit, Great Tit, Long-tailed Tit, Thrush, Blackbird, Wood Pigeon, House Sparrow, Hedge Sparrow, Robin and Wren.

Other birds seen up to the end of October were:—Song Thrush, Missel Thrush, Lapwing, Rook, Chaffinch, Skylark, Greenfinch, Goldfinch, Starling, Common Gull, Carrion Crow, Stock Dove, Kestrel, Heron, Grey Wagtail and Swift.

BOTANY by A. W. Westrup, B.Sc.

No complete record of distribution of plants in the area has been attempted and all the work so far has been on the Flowering Plants only, for lack of experts in other fields. Two major schemes have been started.

(1) Composition of grass communities on the large South Meadow. Three parts of this area were studied by "Spot Counts". A preliminary instructional visit was made in May and a more detailed study in July. Lack of workers prevented the vegetation in more than 20 circles (each one square metre in area) being investigated in each part on this occasion, but further counts to this degree of accuracy should enable valid statistical conclusions to be drawn of floristic changes, as the area reverts from arable to grassland.

The records already show certain marked changes, e.g. the expansion of grass dominance at the expense of *Stellaria media* at spot "C", and the great increase of *Trifolium repens* and *Hypochaeris radicata* at spot "B".

Whether this is a seasonal change or a permanent trend may be shown when a further count is made in May 1954.

(2) A *Belt Transect* has been laid down in the marshy woodland of Moat House Covert.

Trees and herbaceous communities have been mapped as completely as possible on graph paper for comparison in future seasons.

The transect runs from a high bank down into a low Iris swamp, and shows a marked plant zonation corresponding with the depth of

soil above swamp level. It is very noticeable how plants are restricted by their specific water requirements. The top of the bank has a normal acid woodland flora with Elms regenerating vegetatively, one or two seedling Oaks and Ashes, much *Urtica dioica*, *Melandrium dioicum* and *Festuca gigantea* and a ground flora chiefly of *Glechoma hederacea*.

Lower down are a few Elms (not regenerating), while *Angelica sylvestris* is the most notable herbaceous plant together with *Rumex viridis* and *Lycopus europaeus*. Much *Ranunculus repens* appears in the ground flora.

The swampside community below the trees contains *Lycopus europaeus*, *Mentha aquatica*, *Juncus effusus*, *Myosotis palustris*, *Impatiens capensis*, and other water-loving herbs. *Lysimachia nummularia* is the most notable member of the ground flora. The swamp itself is an almost pure *Polygonum hydropiper* community with a few shoots of *Iris pseudacorus* and *Rorippa amphibia* standing out.

Further work is being carried out on soil profiles and composition in an attempt to correlate this with the flora.

ENTOMOLOGY by C. W. Pierce.

Entomologically the survey has so far been disappointing for many reasons. Only two members have carried out any work and only on four occasions. Few orders have been studied due to the lack of specialists or complete entomologists.

Fifteen butterflies have been observed, namely:—Brimstone, *Gonepteryx rhamni*; Brown Angus, *Aricia agestis*; Comma, *Polygona c-album*; Common Blue, *Polyommatus icarus*; Green-veined White, *Pieris napi*; Large White, *Pieris brassicae*; Meadow Brown, *Maniola jurtina*; Peacock, *Nymphalis io*; Red Admiral, *Vanessa atalanta*; Small Copper, *Lycaena phlaeas*; Small Heath, *Coenonympha pamphilus*; Small Skipper, *Thymelicus sylvestris*; Small Tortoiseshell, *Aglais urticae*; Small White, *Pieris rapae*, and Wall, *Pararge megera*. As the writer has observed eleven further species in the district, the above list may be increased next year. Observations are also being made on Moths. Although the conditions appear to be suitable for Dragonflies, none was noticed on the few occasions when the site was visited.

If the survey is to be worthwhile from the entomological aspect, help from more members with specialised knowledge is needed.

We hope this preliminary report will encourage more observers to visit the Park, and so extend the field of study in an area where many interesting problems await investigation.

ACKNOWLEDGMENTS.

Thanks are due to our Section Leaders for their work and reports, and to members who have helped them to present this report, and to Messrs. R. E. Butler, P. Chamberlin, R. R. Hill, A. W. Jones, D. K. Mugford and A. D. Roberts and Miss H. M. Smith.

The Survey of Bookham Common.

TWELFTH YEAR.

Progress Report.

AS noted in the Section's Annual Report, there has again been an increase both in the average attendance and in the amount of work done, in spite of bad weather on two of the monthly meetings.

VEGETATION.

As foreshadowed in the last Progress Report, the activities of the botanical team were concentrated during 1953 in the production of a check list of vascular plants. The results of this work appear on p. 25.

LICHENS. (Report by J. R. Laundon.)

The survey of the lichens was commenced in the summer of 1953, and with the help of Mr. A. H. Norkett 32 species had been collected by November. Much attention was paid to the flora of the oak trunks in the woods and a brief examination made of the brick bridges on the plains. The lichen flora appeared to be only very slightly affected by the smoke of London, for *Evernia prunastri* Ach., *Parmelia caperata* Ach. and *Pertusaria amara* Nyl. were all found to be fairly common.

FUNGI.

Miss M. F. Hancock, a new member of the Society, has started to investigate microscopic aquatic fungi and records the following aquatic hyphomycetes in December from one decayed and unidentifiable leaf in running water of the Isle of Wight Ditch (c. 884):—*Tricladium splendens* Ingold, *Tetracladium marchalianum* De Wild and *Anguillospora longissima* (Sacc. & Syd.) Ingold.

GRASSHOPPERS. (Report by W. Ruttledge.)

Counts were continued for a second season, when nymphs were found to be present in greater abundance in the two quadrats marked out in 1952. The distribution maps of grasshoppers on the short-grass quadrat for the two seasons suggest an almost random distribution. The botanical survey made in September 1952 was supplemented so as to estimate the percentage distribution of the various plant species. There appeared to be no obvious correlation between the presence of first and second instar nymphs and any botanical or ant-hill feature. By marking 24 early nymphs with a dot of red paint it was found that the maximum distance moved between one week and the next was 4 feet 4 inches.

HEMIPTERA-HETEROPTERA. (Report by E. W. Groves.)

During the past year a study has been commenced of the grass-inhabiting plant-bugs (Hemiptera-Heteroptera) occurring in two selected grass areas, each 40 feet square. The first of these is in the dry *Molinia* belt at the eastern end of Eastern Plain, whilst the other

is on the moist alluvial soil of the Isle of Wight Plain, close by Bookham Stream, where the dominant grass is *Arrhenatherum elatius*. A monthly visit has been paid to each of the sites, with an occasional additional inspection during the all-important months of June, July and August. Material has been collected by sweeping during most of these visits.

The emphasis of the investigations has so far been placed on populations, but later it is hoped to develop them so as to provide (a) bionomic details, especially on the life histories of the species in relation with one another and (b) a comparison of the different types of Bookham grassland and their associated plant-bugs. Although particular attention has been paid to those species included in the *Stenodemini* group, other Heteroptera occurring in the same habitat have not been neglected. Data with regard to numbers of adults, their sex, the various instars and the numbers of each, have been recorded for all species.

So far, 22 species have been noted from the sites, though the presence of one or two may have been fortuitous, as their known life-histories do not include any stage spent on grass. A species new to Surrey, *Poeciloscytus palustris* Reuter, was found in the damp grass area (*Ent. mon. Mag.*, 1954, in the press). A single female was taken on August 9th, though I have since found both sexes elsewhere on the Common.

LEPIDOPTERA.

Mr. A. S. Wheeler has been appealing for help to entomologists of this and other societies and hopes to be able to compile a list during the coming year.

SPIDERS.

Mr. A. E. le Gros has, unfortunately for the Survey, had to leave London, but he reports that in February he secured three adults and one immature male of *Micaria subopaca* Westring in the same tree as he found the female in August 1952. Only one other male has been found, that by Millidge at Holmbury in May 1952.

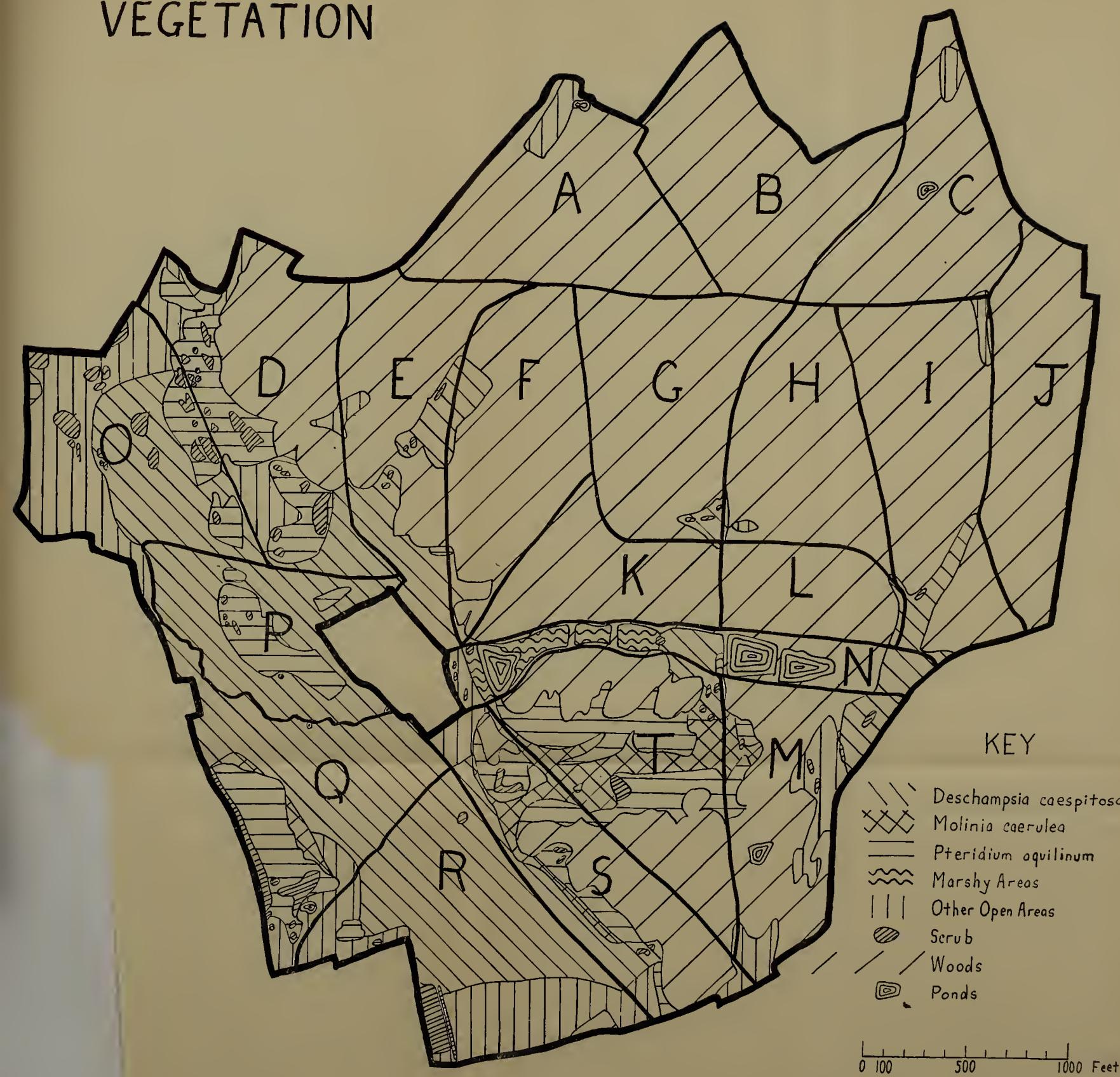
WOODLICE. (Report by A. E. le Gros.)

Mr. A. E. Ellis in his note on the "Woodlice of Bookham Common" (*L.N.*, No. 27, pp. 59-60, 1948) omits mention of the small white myrmecophilous species *Platyarthrus hoffmanseggi* Brandt. Adults and immature specimens have been found at all times of the year in the ant hills of *Lasius flavus* F., so abundant in the plain lands at Bookham. It probably exists in the nests of other ants as well. The dependence of woodlice on moisture remarked upon by Mr. Ellis is most marked in this species; individuals placed in a dry tube die within fifteen minutes.

AMPHIPODS.

Mr. A. E. Ellis recorded *Eucrangonyx gracilis* (S. I. Smith) from three ponds on the Common in 1947 (*L.N.*, No. 27, p. 60, 1948); Col.

BOOKHAM COMMON VEGETATION



Bensley has now found this species (determination confirmed by the British Museum (Nat. Hist.)) in a gun pit on Eastern Plain.

MOLLUSCA. (Report by C. J. F. Bensley.)

Work during 1953 has again been confined to the gun-pits and bomb craters. Comparatively long dry periods have caused the gun-pits to be empty of water more often than not. The hold of the fresh-water mollusca even on C gun-pit is extremely precarious. There appear to be no mollusca in any of the bomb craters though conditions in most of them would seem favourable. A further period for collecting data is apparently required.

BIRDS. (Report by G. Beven.)

The previous work on the birds of the Common, especially that on the bird population of Eastern Wood, has been continued, together with the study of the volume of bird song during the year. In 1953 the total number of Wrens in Eastern Wood (40 acres) was found to be reduced by at least one third, as compared with the previous three years. This scarcity was most noticeable in the spring, when the number of territories of singing males was estimated at about ten. In the previous four years, this number varied between about 17 and 20. The cause of this reduction in Wren population remains obscure.

As a result of mapping the position of singing males on Western Plain, the number of territories of Yellow Buntings was found to be five or six. (In previous years the figures were:—1948 9-11, 1949 5-7, 1950 5-7, 1951 5). The number of territories of Tree Pipits was found by similar methods to be four or six (1943 4, 1947 5-6, 1948 11, 1949 8-9 and 1950 4-6).

It has already been shown that Chaffinches largely leave Eastern Wood (dense oakwood) after the breeding season. There is now suggestive evidence that many of them also leave Western Plain during the winter. Further observations on the wintering of the Bookham Chaffinches are required.

Further collecting of pellets of the Tawny Owl in Eastern Wood revealed the remains of a Whiskered Bat, *Myotis mystacinus*. Bat remains are not very commonly found in owl pellets.

Mr. S. H. Chalke has continued his studies on the vertical zonation of the birds of Eastern Wood and his results appear on p. 47.

MAMMALS.

Dr. Beven reports that, doubtless owing to the large number shot on the Common during the last three years, Grey Squirrels were very much scarcer in Eastern Wood in 1953.

The Flora of Bookham Common

By A. W. JONES.

A PRELIMINARY check list of the vascular plants was drawn up in 1950 by E. B. Bangerter and C. P. Castell to stimulate the pro-

duction of a more detailed account. In 1953 a special survey to achieve this was carried out by the author and E. B. Bangerter, C. P. Castell, Mrs. J. F. Hall and P. C. Hall, who have collaborated in the preparation of this paper.

PLAN OF PAPER.

The Common has been divided into twenty divisions of similar size, lettered A-T, to record the distribution of species, the boundaries consisting of clearly defined topographical features; the divisions having no ecological significance.

During 1953 all divisions were visited two or three times and lists prepared of species present. From these lists and from an analysis of records from various special surveys and casual notes made since the inception of the survey in 1942, the systematic list has been compiled. Where a species was not seen during 1953, the year of its last occurrence is given.

The nomenclature of Clapham, Tutin and Warburg (1952) has been adopted for scientific names (except where the authority is given) with the addition of synonyms from Bentham and Hooker (1924) in certain cases. Rayner (1927) has been used, as far as possible, for popular names. When drawn from other sources they are shown between inverted commas.

In the systematic list is given the total number of divisions for which each species has been recorded, followed by the known distribution among the divisions. Although it has not been possible in the time to cover every part of the Common in detail, the account aims at giving a general idea of the frequency, habitats and distribution of each species.

ABBREVIATIONS.

Abbreviations used in the tables following are:—

+ present	d dominant	I.o.W. Isle of Wight
r rare	l local (ly)	L.E. Lower Eastern
o occasional	v very	S.E. South Eastern
f frequent	s sub-	U.E. Upper Eastern
a abundant	c co-	

GENERAL DESCRIPTION OF VEGETATION OF COMMON.

The soil over most of the Common is a loam derived from the underlying London Clay with the exception of a small capping of Plateau Gravel on the higher ground and a narrow belt of alluvial deposits fringing the streams.

From the map it will be seen that the Common can be fairly easily divided into:—

1. Damp oakwood on higher ground and slopes, dominated by the Common Oak, *Quercus robur*.

2. Grassland of the low-lying plains mainly dominated by Tufted Hair Grass, *Deschampsia caespitosa* and Bracken, *Pteridium aquilinum*.
3. Ponds and streams and the wet hollows in N.

1. Woods.

The chief woods (A-L) cover the higher ground from 135 feet above O.D. in the west to 233 feet at High Point. South East Wood comprising parts of M S and T is on the other area of high ground above 150 feet.

The dominant woodland tree is the Common Oak, *Quercus robur*. The woodland vegetation was investigated in some detail in 1943 by C. P. Castell and A. R. Wilton, a short summary with a map being published by Steele (1947). From their detailed manuscript notes Table 1 has been compiled.

TABLE 1.

The frequency of the commoner plants in the woods of each division.

	A	B	C	D	E	F	G	H	I	J	M	R	S	T
--	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Tree Layer

<i>Acer pseudoplatanus</i>	o	l	r	vf	lf	l								
<i>Ulmus procera</i>	l												d	
<i>Betula</i>	lf	f	vf	o	l	l	la	o	o	vf	o		f	vf
<i>Quercus cerris</i>	l	l	lf		r		la	lf	lf					
<i>Fraxinus excelsior</i>	lf	o	l	o	lf									

Upper Shrub Layer

<i>Ilex aquifolium</i>	lf	vf	vf	ld	o	o	l	o	o	f	lf		f	f
<i>Prunus spinosa</i>	o			o	f			lf	o				o	
<i>Crataegus</i>	lf	lf	o	ld	ld	d	f	la	la	f	la	ld	sd	f
<i>Corylus avellana</i>	la	ld	ld	o	lf	la	la	lf	vf	f	l		o	o
<i>Salix</i>	lf	r	o	o	l	o	l	la	o	o	lf			l

Lower Shrub Layer

<i>Pteridium aquilinum</i>	la	ld	ld	ld	la	sd	ld	vf	ld	la	f		a	vf
<i>Rubus</i>	f	vf	vf	lf	lf	f	f	la	vf	vf	la	vf	vf	vf
<i>Rosa</i>	lf	o	l	o	lf	lf	lf	f	lf	o	f	o	f	f
<i>Lonicera periclymenum</i>	lf	la	f	lf	lf	lf	lf	f	lf	lf	lf	f	f	lf

Ground Layer

<i>Oxalis acetosella</i>	la	a		o	lf		lf		o	f				
<i>Hedera helix</i>	l	o	l	o	o	o	l	o	o	l	l	o	f	l
<i>Rumex sanguineus</i>	lf	o	l	la	l					lf				
<i>Digitalis purpurea</i>	lf	lf	lf	l	l	r	lf	o		o				r
<i>Primula vulgaris</i>	o	o	l	o	o	o	r	lf	f	o				

2. Plains.

The principal plains are O-R and part of D which occupy the lower ground falling from 150 feet in the south to 98 feet at Hundred Pound Bridge in the north.

The following types of vegetation may be recognised:—

- (a) *Deschampsia caespitosa* grassland as shown on map—many small areas of grassland of other types are however scattered across it. There is a varied flora but with the exception of a local abundance of *Arrhenatherum elatius*, few species achieve prominence.
- (b) Bracken (*Pteridium aquilinum*) areas as shown on map.
The mapping of these areas was done by M. T. Hindson and later checked on the ground by E. B. Bangerter and C. P. Castell with the aid of an aerial map. Very little else will grow where Bracken is thick, but *Arrhenatherum elatius* is present in some quantity in more open communities and *Molinia caerulea* persists in divisions Q and T where Bracken is advancing.
- (c) Degenerate heathland in E. Plain (parts of M and T), a *Molinia caerulea* area (see map), boggy in part with occasional bog moss (*Sphagnum*) and a little Ling (*Calluna vulgaris*), etc., but mostly overgrown with Bracken.
- (d) Other *Molinia caerulea* grassland (see map) which appears to be restricted to swampy but less well drained areas.
- (e) Scrub as shown approximately on the map—small bushes occur all over the plains.

A survey of the scrub was made in 1943 by Castell and Wilton and Table 2 has been extracted from their detailed work.

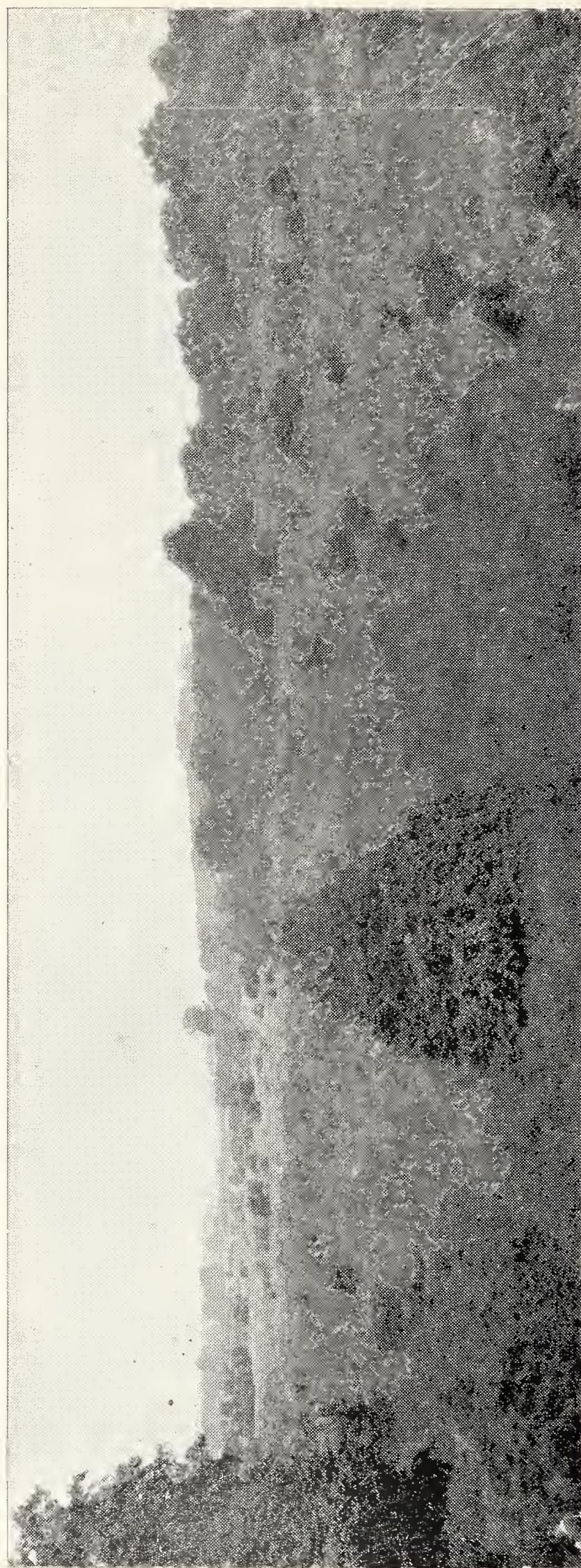
TABLE 2.
Commoner species of the scrub.

	Western Scrub.	Bank's Plain.	Bayfield Plain.	By Bayfield Pond.	The Clump.	Central Plain.	Eastern Plain.
<i>Ilex aquifolium</i>	a						
<i>Rubus</i>	a		f	lsd			a
<i>Rosa</i>	f	+	f	+			o
<i>Prunus spinosa</i>	ld	d		ld	d		
<i>Crataegus</i>	ld	sd	d	d	o		d
<i>Betula</i>	o						d

Populus tremula is also a frequent constituent of Eastern Plain and in recent years *Salix atrocinerea* has become prominent largely from growth in the gun-pits.

- (f) Short grassland, the result of biotic action on the above:—
 - (i) By ant hills (often frequented by rabbits)—usually fairly small.
 - (ii) Other larger areas from deturfing, grazing or possibly fire.
 - (iii) Paths, some kept artificially wide by mowing.
- 3. Ponds and Streams and Wet Hollows in N.
- (a) Ponds.

The ponds were first surveyed in 1942-3 and the results published by Castell (1945). From recent work Table 3 has been compiled.



Bookham Common from the Railway Station, looking north (May, 1949).

The view shows the low-lying alluvial belt (Central and Western Plains), a *Deschampsia caespitosa-Arrhenatherum* Grassland, colonised by Hawthorn Scrub. Elm of Station Copse on left, Hawthorn in foreground, the high ground of Hill-House Wood in distance and Hawthorn-Bracken scrub fringe of South-Eastern Wood on right.

(Photo : C.P.C.)

TABLE 3.

Chief constituents of the flora of the larger ponds.

	S.E.	Sheepbell.	Kelsey's.	Bayfield.	I.O.W.	L.E.	U.E.
<i>Equisetum fluviatile</i>					1d	1d	1d
<i>Ranunculus repens</i>	+	+	+	+	1d	1d	
<i>R. aquatilis</i>	+			la	+		la
<i>Epilobium hirsutum</i>					1f	1d	1d
<i>Salix atrocinerea</i>	1d		1f		1d	1d	1d
<i>Calystegia sepium</i>						1a	1a
<i>Lemna polyrrhiza</i>			cd				
<i>Lemna minor</i>	+		cd		+	+	+
<i>Sparganium ramosum</i>	1d				1d	1d	1d
<i>Typha latifolia</i>					la		
<i>Agrostis canina</i>	la		+		1f	+	+

Salix atrocinerea and *Juncus effusus* predominate in the three small much-shaded Mark Oak Ponds and these two species are the most frequent in the gun-pits and trenches on Eastern Plain, the flora of which has been described in detail by Bangerter and Castell (1949 and 1951).

There are four bomb craters, 264, 544, 736, 766, which hold water most of the year and a number of old ponds—Manor and West Ponds being still very marshy. Bank's Pond has now dried up but still retains *Oenanthe fistulosa*.

(b) Streams.

The flowing streams comprise Bank's and Bookham Streams and I.o.W., Greendell and Hollow Ditches. The streams and ditches are cleared occasionally and the vegetation is sparse but a belt of *Epilobium hirsutum* up to twenty yards wide occurs along Bank's and Bookham Streams.

(c) Wet Hollows in N.

West and East Hollows which were ponds fifty years ago are very marshy and bordered by *Salix atrocinerea* like the ponds in the rest of division N. A small marshy area also occurs to the west of I.o.W. Pond.

ACKNOWLEDGMENTS.

Thanks are due to E. R. Denyer, E. W. Groves, and G. F. Lawrence for assistance in the special survey in 1953, to Dr. A. Melderis of the British Museum (Natural History), for identification of some of the critical plants, to all the Bookham Team, past and present, most of whom have given help, advice and records at one time or another, as well as to other members who have sent in records made on occasional visits.

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SYSTEMATIC LIST.

Equisetum fluviatile. (*E. limosum*). Water Horsetail. 1. N.
 Locally dominant in each of the three ponds in division N.

E. palustre. Marsh Horsetail. 1. N.
 Damp places in I.o.W. Pond, W. and E. Hollows.

E. arvense. Field Horsetail. 10. BDJMNOQ-T.
 Occasional in damp places.

Pteridium aquilinum. Bracken. 20.
 Frequent throughout and often dominant in the ground layer of the woods (see Table 1); dominant over many parts of the plains (see map), apparently advancing over two *Molinia caerulea* areas—in T from north and south of E. Plain and in Q from the western boundary.

Athyrium filix-femina. Lady Fern. 1. K.
 One plant by very damp woodland path 582.

Dryopteris filix-mas agg. Male Fern. 16. A-EH-NQ-T.
 Occasional in the woods, most frequent in the damper parts.

D. spinulosa. Narrow Buckler Fern.
 Recorded in woods in BCDG and F or K but most or all records may be referable to *D. austriaca*.

D. austriaca. (*Aspidium dilatatum*). Broad Buckler Fern. 11. A-HKLT.
 Occasional in woods in drier places and less often than *D. filix-mas* agg.

Polystichum setiferum. Angular Shield Fern. 2. BD.
 Woods 239, 43 (1945)

Ophioglossum vulgatum. Common Adder's Tongue. 4. P-S.
 Locally frequent in lower parts of I.o.W., Bayfield and Central Plains in grass where doubtless often overlooked.

Pinus sylvestris. Scotch Pine. 1. O.
 Sapling near Bank's Cottage.

Taxus baccata. Yew. 10. BCGHJ-MST.
 Rare in woods, records largely of isolated trees, saplings or seedlings.

Anemone nemorosa. Wood Anemone. 3. ABJ.
 Abundant in Hazel Copse off the Common by B, occasional plants in surrounding woods.

Clematis vitalba. Wild Clematis. 1. R.
 In hedge of Bookham Grange Hotel 769.

Ranunculus acris. Meadow Buttercup. 14. ADEFIJM-T.
 Occasional in grassy places.

R. repens. Creeping Buttercup. 20.
 Frequent and locally abundant in grassy and wet places and by paths.
 A double-flowered form recorded from O.

R. bulbosus. Bulbous Buttercup. 5. CKMRS.
 Rare in short turf.

R. auricomus. Goldilocks.
 Recorded for Hazel Copse by B, a few yards off the Common.

R. flammula. Lesser Spearwort. 20.
 Frequent in ponds and wet places, occasional in cart ruts of the rides.

R. sceleratus. Celery-leaved Crowfoot. 3. AB or CO.
 Wet places 421, Kelsey's Pond, Sheepbell Ditch.

R. aquatilis. Water Crowfoot. 5. AMNPQ.
 Ponds, usually a fine display in I.o.W., U.E. and Bayfield Ponds, these being ssp. *peltatus*.

R. hederaceus. Ivy-leaved Water Crowfoot. 2. B or CN.
Greendell and Sheepbell Ditches (1943).

R. ficaria. Lesser Celandine. 17. ABDEFI-T.
Locally frequent at edges of woods and thickets.

Aquilegia vulgaris. Columbine. 3. JNS.
Clump by garden in N, two other plants in J and S doubtfully native.

Nymphaea alba. White Water-lily. 1. N.
A single plant in U.E. Pond (1951).

Papaver rhoeas. Corn Poppy. 4. EMOR.
Rare in disturbed ground.

P. somniferum. Opium Poppy. 3. JMQ.
Rare in disturbed ground.

Chelidonium majus. Great Celandine. 1. S or T.
Wood 865 (1946).

Fumaria officinalis. Common Fumitory. 1. J.
Disturbed ground in one spot.

Sisnapsis arvensis. Charlock. 4. DEMO.
Rare in disturbed ground.

Raphanus raphanistrum. Wild Radish. 1. E.
Disturbed ground 575.

Coronopus squamatus. (*C. ruellii*). Swine's Cress. 2. OQ.
Rare on paths.

C. didymus. Wart Cress. 2. DM.
Rare on paths.

Capsella bursa-pastoris. Shepherd's Purse. 6. DEMOQR.
Rare in disturbed ground.

Lunaria annua. Honesty. 1. Q.
Hedge, garden escape, a single plant. (1951).

Erophila verna. Common Whitlow-grass. 1. R.
Ant-hill, Central Plain, one doubtful record. (1951).

Cardamine pratensis. Cuckoo Flower. 12. ABDEKMN-P-T.
Frequent in ponds, streams, ditches and wet places.

C. flexuosa. Perennial Hairy Bitter Cress. 5. DIJKT.
Occasional in woods and damp places.

C. hirsuta. Hairy Bitter Cress. 2. RS.
Occasional on ant-hills and other dry places.

Barbarea vulgaris. Winter Cress. 4. O-R.
Occasional by stream-sides.

Nasturtium spp. Water Cress. 7. ABN-R.
Species of *Nasturtium* are occasional in ponds and along flowing streams; the only specimens critically examined (from N) were all referable to *N. microphyllum*.

Rorippa islandica. (*Nasturtium palustre*). Marsh Yellow Water Cress. 2. OP.
Plants by stream-side 445, on damp path 4953.

Hesperis matronalis. Dame's Violet. 1. P.
Single plant by stream some distance from any garden.

Erysimum cheiranthoides. Treacle Mustard. 2. MR.
Plant on disturbed ground M and near I.O.W. Ditch. (1951).

Cheiranthes cheiri. Wallflower. 1. Q.
Garden outcast.

Alliaria petiolata. (*A. officinalis*) Garlic Mustard. 9. DJMO-T.
Occasional by hedges and streamsides.

Sisymbrium officinale. Hedge Mustard. 4. DMOR.
Rare by paths.

Arabidopsis thaliana. Thale Cress. 2. RS.
On ant-hills on Central Plain.

Viola odorata. Sweet Violet. 1. R.
Locally abundant in Station Copse (purple-flowered) and on embankment 875 (white-flowered); a few plants near The Clump.

V. riviniana. Dark Wood Violet. 16. ABD-MPQST.
Very frequent throughout the woods and occasional across the plain

Recorded in past from all divisions but not then distinguished from
V. reichenbachiana

V. reichenbachiana. Pale Wood Violet. 2. AB.

Frequent in Hazel Copse off the Common and occasional in Stents Wood.

V. canina. Dog Violet. 5. DMPST.

Very local in short grass on plains, perhaps overlooked.

V. arvensis. Field Pansy. 1. M.

One plant on newly made-up path (1951).

Polygala vulgaris. Common Milkwort. 3. DEM.

Very rare in short grass.

Hypericum androsaemum. Tutsan. 1. J.

One clump in thicket in wood (1952).

H. calycinum. Large-flowered St. John's Wort. 1. I.

Planted by houses.

H. perforatum. Perforate St. John's Wort. 3. ANR.

Very rare in grassy places.

H. tetrapterum. Square-stalked St. John's Wort. 7. AN-S.

Occasional in damp places.

H. humifusum. Trailing St. John's Wort. 13. ABD-JMNST.

Frequent by paths; occasional in woods and in short grass.

H. pulchrum. Upright St. John's Wort. 10. ABDJKMNPST.

Occasional in shady places, more rarely on plains.

H. hirsutum. Hairy St. John's Wort. 3. ANS.

Rare in shady places.

Silene cucubalus. Bladder Campion. 2. CP.

Very rare by tracks.

Melandrium rubrum. (*Lychnis dioica*). Red Campion. 2. AS.

Very rare in woods (1952).

M. album. White Campion. 2. MR.

Very rare in disturbed ground.

Lycchnis flos-cuculi. Ragged Robin. 9. ADN-T.

Locally frequent on the plains and in damp places.

Cerastium vulgatum. Narrow-leaved Mouse-ear Chickweed. 16. ACDEG-JM-T.

Occasional in grassy places.

C. glomeratum. Broad-leaved Mouse-ear Chickweed. 8. ACDEHINR.

Occasional in ruts of woodland rides and tracks.

Stellaria media. Common Chickweed. 12. ABDEFJMNOQRT.

Occasional in disturbed and bare places.

S. holostea. Greater Stitchwort. 20.

Very frequent in shady places and clearings in woods and occasional on plains.

S. graminea. Lesser Stitchwort. 17. ACDEGHIK-T.

Very frequent in grassy places.

S. alsine. (*S. uliginosa*). Bog Stitchwort. 6. BCGJMN.

Occasional in wet places and margins of ponds.

Sagina procumbens. Procumbent Pearlwort. 7. DIJMQST.

Occasional in bare places.

Moehringia [Arenaria] trinervia. Three-nerved Sandwort. 13. A-EIJKMNQST.

Frequent in woods.

Spergula arvensis. Corn Spurrey. 1. O.

4163 (1950).

Montia verna. Blinks. 1. Q.

A few plants on path forming boundary of Q and R 841. Species of *Montia* have in the past been recorded from N P and T.

Chenopodium polyspermum. Many-seeded Goosefoot. 4. DEOQ.

Occasional in disturbed ground.

C. album. White Goosefoot. 3. JMQ.

Occasional in disturbed ground.

C. rubrum. Red Goosefoot. 4. ANOP.

Rare in disturbed and bare ground.

Beta vulgaris. "Beet". 1. N.
Disturbed ground, one plant (on pile of chalk for track-making).

Atriplex patula. Spreading Orache. 2. JO.
Rare in disturbed ground.

A. hastata. Halberd-leaved Orache. 6. EJMOPQ.
Rare in disturbed ground.

Tilia × vulgaris. Common Lime. 1. D.
One tree near Hill House.

Malva moschata. Musk Mallow. 2. D or OS.
864, 42 (1951).

M. neglecta. (*M. rotundifolia*). Dwarf Mallow. 2. OQ.
Very rare in disturbed ground.

Linum catharticum. Fairy Flax.
82 (1950).

Geranium pratense. Meadow Cranesbill. 1. R.
Abundant in thicket 875.

G. ibericum Cav. 1. Q.
Garden escape. Determined by Dr. A. Melderis.

G. pyrenaicum. Mountain Cranesbill. 1. R.
87 on embankment.

G. dissectum. Cut-leaved Cranesbill. 9. EIM-S.
Occasional by paths and on plains.

G. molle. Dove's-Foot Cranesbill. 2. QR.
Very rare in grassy places.

G. robertianum. Herb Robert. 17. A-EG-NQ-T.
Frequent along woodland paths and occasional in woods and in shady places.

Tropaeolum majus. "Nasturtium". 1. J.
Garden outcast.

Oxalis acetosella. Wood Sorrel. 14. A-KMNT.
Locally abundant in the woods.

O. europaea Jord. f. *cymosa* (Small) Weigand. Upright Yellow Wood Sorrel. 1, J.
A few plants on disturbed ground near houses. Determined by D. P. Young.

Acer pseudoplatanus. Sycamore. 9. A-GRS.
Occasional in woods, locally dominant in Hill House Wood.

A. platanoides. "Norway Maple". 1. D.
Wood, young tree 198 (1943).

A. campestre. Maple. 11. ABDEFJKLORS.
Occasional in woods and hedges.

Aesculus hippocastanum. "Horse Chestnut." 5. BCERT.
Rare, one adult tree recorded.

Ilex aquifolium. Holly. 17. A-NQST.
Frequent throughout the woods and thickets.

Euonymus europaeus. Spindle Tree. 7. ACEJOPR.
Thickets and plains, rare or overlooked.

Frangula alnus. (*Rhamnus frangula*). Alder Buckthorn. 4. AJMT.
Doubtfully recorded, in any case very rare in woods (1952).

Parthenocissus tricuspidata. Virginia Creeper. 1. Q.
Planted by garden (1952).

Genista anglica. Petty Whin. 9. DEFMOPQST.
Locally frequent on plains.

Ulex europaeus. Furze. 10. DEJMN-S.
Occasional by hedges and in grassy places.

U. minor. Small Furze. 13. DEFHL-T.
Occasional on plains; locally frequent.

Sarrothamnus scoparius. Broom. 2. MN.
Garden escape cf. var. *andreaeana* Dipp. near houses.

Medicago lupulina. Black Medick. 3. PRS.
Very rare in grassy places.

Trifolium pratense. Red Clover. 12. CDEIJM-S.
Occasional in grassy places.

T. medium. Zigzag Clover. 3. DQT.
194, 73, E. Plain (1950).

T. repens. White Clover. 15. ACDEGIJM-T.
Occasionally in grassy places, especially by paths.

T. fragiferum. Strawberry-headed Trefoil. 2. NT.
Locally frequent, by track-sides 825, 576.

T. dubium. Lesser Yellow Trefoil. 10. CDGIKMPRST.
Occasional in grassy places.

T. micranthum. (*T. filiforme*). Least Yellow Trefoil. 2. IR.
Grassy places 884, 622, persistent in latter.

Lotus corniculatus. Common Birdsfoot Trefoil. 14. ACDEIKM-T
Frequent in grassy places.

L. uliginosus. Greater Birdsfoot Trefoil. 16. B-GK-T.
Frequent in damp or wet places in open.

Ornithopus perpusillus. Birdsfoot. 1. I.
A single clump, 622 in short grass.

Vicia hirsuta. Hairy Tare. 7. M-S.
Frequent on plains, often in company with *V. tetrasperma*.

V. tetrasperma. Smooth Tare. 6. IO-S.
Frequent on plains.

V. cracca. Tufted Vetch. 7. DEN-R.
Occasional on plains and in bushy places.

V. sepium. Bush Vetch. 13. ABCEH-NPR.
Frequent along shady paths.

V. angustifolia. Narrow-leaved Vetch. 11. DEIJMO-T.
Occasional on plains.

Lathyrus nissolia. Grass Vetchling. 5. DOPRS.
Very locally frequent on plains.

L. pratensis. Meadow Pea. 9. ADEO-T.
Occasional in grassy places.

L. montanus. Tuberous Bitter-Vetch. 6. FHJKST.
Rare by woodland paths.

Spiraea salicifolia. Willow-leaved Spiraea. 1. N.
Escape, a few bushes near houses.

Filipendula ulmaria. Meadowsweet. 8. ACDN-R.
Locally frequent on plains, especially along streams, locally dominant in O.

Rubus idaeus. Raspberry. 4. CIJT.
Rare in woods.

Rubus spp. "Brambles". 20.
Brambles are often abundant in the woods, especially where recent felling has taken place, and very frequent elsewhere. *R. cf. laciniatus* has been recorded from L and M. Mr. Wm. Watson kindly recorded the following in 1945 :—

- R. carpinifolius* W. & N. 43.
- R. lindleianus* Ed. Lees. 59.
- R. polyanthemos* Lindeb. 843 one bush.
- R. cardiophyllus* L. & M. 53, 57.
- R. ulmifolius* Schott fil. general in the open.
- R. pseudobifrons* (Sud.) Bouv. 599.
- R. neomalacus* Sud. 43, 89.
- R. vestitus* W. & N. (fide C. Avery).
- R. disceptus* P. J. Muell. 43, 46.
- R. rufis* Weihe (fide C. Avery).
- R. flexuosus* M. & L. 67.
- R. insectifolius* L. & M. 671.
- R. apiculatus* Weihe. 67, 43.
- R. formidabilis* L. & M. 599.
- R. conjungens* (Bab.) W. Wats. 57.
- R. britannicus* Rog. 43, 869.

Potentilla sterilis. Barren Strawberry. 18. ABD-S.

Frequent along woodland paths and edges of woods and bushy places.

P. anserina. Silverweed. 18. ABDF-T.

Frequent on plains, paths, open grassy places and damp places.

P. erecta. Upright Tormentil. 20.

Frequent on plains and grassy rides in the woods.

P. anglica. (*P. procumbens*). Trailing Tormentil. 8. BCEKNPST.

Rare in grassy places, not well understood and records may need revision.

P. reptans. Creeping Cinquefoil. 16. AD-HJKM-T.

Frequent on plains and by paths.

Fragaria vesca. Wild Strawberry. 17. BDF-T.

Frequent along woodland paths and occasionally in more open places.

F. cf. × ananassa. 1. J.

Garden outcast (1952).

Geum urbanum. Wood Avens. 16. A-GJKMNOQ-T.

Frequent in shady places.

Agrimonia eupatoria. Agrimony. 10. DGKN-T.

Occasional on plains and grassy places.

A. odorata. Fragrant Agrimony. 6. AM-PR.

More partial to bushy places than *A. eupatoria* but often in company with it.

Aphanes [Alchemilla] arvensis agg. Field Lady's Mantle. 6. DIKMPS.

Occasional on ant-hills on plains, that in K in short grass is *A. microcarpa*.

Rosa spp. Roses. 20.

Roses are frequent in woods and on plains.

R. arvensis (Field Rose) has been recorded from EFJLNORT and appears to be the commonest species in bushy places and along woodland paths.

R. canina (Dog Rose) has been recorded from EFJHIOR and appears to be more common on the plains. *R. rubiginosa* agg. (Sweetbriar) recorded from E- a single bush. *R. dumetorum* Thuill and *R. villosa* have been recorded from 86. A cultivated rose is growing all along the dam of L.E. Pond in N. and flowers freely, a species also occurs as an escape in Q.

Mr. Wm. Watson recorded the following in 1945 :—

Rosa arvensis Huds. General in open and shade.

R. glaucescens Desv. 891.

R. sphaerica Gren. 85.

R. oxyphylla Kip. 843, 85.

R. insignis Desegl. & Rip. 85.

R. dumalis Bechst. 57.

R. sylvularum Rip. 599.

R. urbica Lem. 85.

R. semiglabra Rip. 891.

R. hemitricha Rip. 85.

R. Renteri var. *subcollina* (Chr.) 891.

R. tomentella Lem.

Prunus spinosa. Blackthorn. 18. AC-KM-T.

Frequent in woods forming dense thickets by paths and at edges of woods.

Frequent by bracken areas on the plains, also forming dense thickets in places.

P. domestica. 1. R.

Plant in hedge on boundary of Common believed to be ssp. *insititia* (Bullace).

P. avium. Gean. 2. HI.

A fine clump, about 30-35 ft. high with many saplings and seedlings 614, seedlings in I.

Cotoneaster simonsii. 1. N.

Near U.E. Pond (1952).

Crataegus oxyacanthoides. Midland Hawthorn. 3. KMN.

Woods, further distribution unknown.

C. monogyna. Hawthorn. 20.

Often abundant in the woods and always frequent. A very frequent shrub all across the plains occasionally forming thickets.

Sorbus aucuparia. Mountain Ash. 5. BGLNT.

Very rare in woods, only seedlings and one sapling observed.

S. aria agg. Whitebeam. 1. S or T.

Wood 865 (1950).

Malus sylvestris. (*Pyrus malus*). Crab Apple. 13. B-EI-NRST.

Occasional in woods, usually isolated trees and rare on plains.

Philadelphus sp. "Mock Orange". 2. JM.

By gardens, probably planted.

Ribes rubrum agg. Red Currant. 9. AJKMNQ-T.

Occasional in woods, often in damp places.

R. nigrum. Black Currant. 7. CEJLMNR.

In similar places to *R. rubrum* but occasionally in more open places.

R. uva-crispa. Gooseberry. 3. CRT.

Very rare in shady places.

Peplis portula. Water Purslane. 8. ABCEGINP.

Occasional in bare damp places.

Epilobium hirsutum. Great Hairy Willowherb. 13. BDEIJM-T.

Frequent in damp places, abundant along Bookham and Bank's Streams and in I.O.W., L.E. and U.E. Ponds and W. Hollow.

E. parviflorum. Small-flowered Willowherb. 1. N.

811 and in several spots in I.O.W. Pond, apparently hybridising freely there with *E. palustre*.

E. montanum. Broad-leaved Willowherb. 12. ADEI-NRST.

Occasional in damp woods.

E. adenocaulon. 1. N.

East Hollow, further distribution unknown.

E. obscurum. Dull-leaved Willowherb. 11. ABGJKMNP-S.

Occasional in damp places but imperfectly understood.

E. palustre. Marsh Willowherb. 6. ACMNQR.

Occasional in ponds and wet hollows.

Chamaenerion angustifolium. Rosebay. 18. A-PST.

Frequent in open parts of woods and occasionally elsewhere.

Oenothera spp. "Evening Primrose". 3. JMQ.

Very rare in disturbed ground. That in J appears to be referable to *O. erythrosepala*.

Circaea lutetiana. Common Enchanters-nightshade. 14. A-FH-KMNST.

Occasional in the woods, locally frequent especially where recent clearings have taken place.

Myriophyllum alternifolium. Alternate-flowered Water Milfoil. 1. D.

Bomb crater 544 (1950).

Callitrichie spp. Water-starwort. 14. ABCE-HJM-QT.

Frequent and locally abundant in ponds, streams and other wet places, probably all referable to *C. stagnalis*.

Cornus sanguinea. Dogwood. 16. ACDEG-NQ-T.

Occasional in woods and hedges.

Hedera helix. Ivy. 19. A-NP-T.

Frequent in woods and shady places.

Hydrocotyle vulgaris. Marsh Pennywort. 7. BMNPQST.

Local in ponds and wet grassy places, particularly associated with *Molinia caerulea* areas.

Sanicula europaea. Wood Sanicle. 7. EGI-M.

Occasional but local in woods.

Chaerophyllum temulum. Rough Chervil. 1. Q.

Hedgerow 482.

Anthriscus sylvestris. Wild Chervil. 9. BJM-S.

Occasional in hedgerows and pathsides.

Torilis japonica. (*Caucalis anthriscus*). Upright Hedge-parsley. 12. DEIJM-T.

Occasional on plains and in open spaces.

Conium maculatum. Hemlock. 4. O-R.

Frequent along I.o.W. Ditch and Bookham and Bank's Streams.

Apium nodiflorum. Procumbent Marshwort. 9. ABCM-R.

Occasional in ponds and along streams.

A. inundatum. Least Marshwort. 3. MNQ.

Occasional in ponds.

Conopodium majus. Pignut. 5. GJNQT.

Rare in shady places.

Pimpinella saxifraga. Smaller Burnet-Saxifrage. 5. DP-S.

Occasional in short grass on plains.

Aegopodium podagraria. Goutweed. 8. CJMNOQRS.

Local in grassy places.

Oenanthe fistulosa. Tubular Water-dropwort. 1. P.

Occurs in dried up Bank's Pond.

Oe. crocata. Hemlock Water Dropwort. 2. CQ.

In clearing in thicket 327, also 732.

Aethusa cynapium. Fool's Parsley. 1. Q.

In cultivated plot 489.

Silaum silaus. (*Silaus flavescens*). Pepper Saxifrage. 8. DEN-S.

Frequent on plains OPQRS, rare elsewhere.

Angelica sylvestris. Wild Angelica. 12. ACDEHN-T.

Frequent on plains, occasional elsewhere in damp places.

Pastinaca sativa. Wild Parsnip. 8. M-T.

Locally frequent in grassy places.

Heracleum sphondylium. Hogweed. 15. A-EIJM-T.

Frequent on plains, grassy places and clearings and pathsides in woods.

Bryonia dioica. White Bryony. 10. ADEJO-T.

Occasional in bushy places.

Mercurialis perennis. Dog Mercury. 5. ABDE S or T.

Occasional in woods along the northern boundary of the Common and one record from 869.

M. annua. Annual Mercury. 1. E.

Disturbed ground 575.

Euphorbia peplus. Petty Spurge. 7. DJMNQRS.

Occasional in disturbed ground.

E. amygdaloides. Wood Spurge. 1. S.

Occasional in eastern part of S.E. Wood.

Polygonum aviculare agg. Knotweed. 9. CDEJMO-R.

Occasional in disturbed ground and on paths.

P. persicaria. Common Persicaria. 8. BDEM-Q.

Occasional in disturbed ground.

P. lapathifolium. Pale Persicaria. 1. O.

Disturbed ground 446; doubtfully recorded for I.o.W. Pond.

P. hydropiper. Water Pepper. 14. A-EG-JM-PR.

Very frequent in the ruts of woodland tracks, also occasional in ponds and ditches.

P. convolvulus. Climbing Buckwheat. 2. MQ.

Rare in disturbed ground.

P. cuspidatum. Giant Knotweed. 1. J.

By garden hedge 63.

Rumex acetosella agg. Sheep Sorrel. 7. DGKMOST.

Occasional in grassy places.

R. acetosa. Dock Sorrel. 19. A-FH-T.

Very frequent on the plains and grassy places elsewhere.

R. crispus. Curled Dock. 4. DMPR.

Rare in disturbed ground.

R. obtusifolius. Broad-leaved Dock. 14. A-EJM-T.

Occasional in grassy places and disturbed ground.

R. sanguineus var. *viridis*. (*R. nemorosus*). Green-veined Dock. 18. A-ORST.

Very frequent in the woods, woodland clearings and occasionally in damp places.

R. conglomeratus. Sharp Dock. 13. ADEGHIN-T.
Occasional on plains and in damp places.

Urtica urens. Small Nettle. 2. MQ.
Very rare in disturbed ground.

U. dioica. Common Nettle. 15. A-EIJM-T.
Widespread, particularly in open places, locally abundant on plains near streams.

Humulus lupulus. Hop. 5. CDNOR.
Rare in bushy places.

Ulmus procera. (*U. campestris*). Common Elm. 9. ABDEN-R.
Local constituent of hedges bordering Common and constitutes Station Copse.

Betula verrucosa. Common Birch. 18. A-NQ-T.
Frequent and locally abundant in woods and at edges of plains.

B. pubescens. Downy Birch. 3. HMT.
Woods and plains, rare or not distinguished from *B. verrucosa*.

Carpinus betulus. Hornbeam. 5. ABDEM.
Rare in woods but locally frequent in A and E.

Corylus avellana. Hazel. 17. A-NQST.
Very frequent in woods, locally dominant in shrub layer especially in ABCF and G.

Fagus sylvatica. Beech. 13. A-EGHJMOQST.
Occasional in woods, planted in ADOQT.

Castanea sativa. Sweet Chestnut. 2. AJ.
Local in woods. A copse by Kelsey's Pond.

Quercus cerris. Turkey Oak. 10. A-IM.
Locally abundant in the northern woods, often seedlings and saplings, rare elsewhere.

Q. robur. Common Oak. 20.
The dominant tree in all the woods, frequent scrub element all over the plains.

Populus alba. White Poplar. 1. R.
A few saplings and trees, 848, 872.

P. tremula. Aspen. 10. AEFGIJMNST.
Occasional in woods, very frequent around E. Plain.

Salix fragilis. Crack Willow. 8. ADENP-S.
Occasional by ponds and streams, some fairly old trees by Bayfield Pond.

S. viminalis. Osier. 2. OR.
Very rare on damp plains.

S. caprea. Sallow. 14. A-DG-JLMNRST.
Occasional in woods and damp places. Var. *rotundifolia* Gaud. recorded from Pit D.

S. atrocinerea. (*S. cinerea*). Grey Sallow. 20.
Frequent in woods and damp places, abundant in the ponds and hollows of Division N.

Calluna vulgaris. Ling. 5. DMNST.
Occasional on E. Plain, rare elsewhere.

Primula veris. Cowslip. 4. BEPR.
Very rare in grassy places.

P. vulgaris. Primrose. 15. A-LNQR.
Frequent in woods, rarely in open spaces.

Primula sp. 1. J.
A purple-flowered garden outcast by Peacedene (1952).

Lysimachia nemorum. Yellow Pimpernel. 10. ABDG-KST.
Occasional by woodland paths.

L. nummularia. Creeping Jenny. 12. BCEIJM-S.
Occasional in open damp or wet places, including some ponds.

Lysimachia sp. 1. M.
Garden outcast, similar to *L. punctata* in appearance.

Anagallis arvensis. Scarlet Pimpernel. 6. DJMOQR.
Rare in disturbed ground.

Centunculus minimus. Chaffweed. 1. S.

A few plants in Pit B (1951).

Fraxinus excelsior. Ash. 16. A-JLN-R.

Frequent in woods and thickets, rare elsewhere.

Ligustrum vulgare. Privet. 5. ABDJO.

Rare at edges of woods and in hedges.

L. ovalifolium. 1. J.

Planted near houses.

Vinca minor. Lesser Periwinkle. 1. D.

A few plants near Hill House, apparently wild.

V. major. Greater Periwinkle. 3. COR.

Creeping from gardens, rare.

Centaureum minus. (*Erythraea centaurium*). Centaury. 3. DMO.

Very rare in short grass.

Symphytum officinale. Common Comfrey. 2. EP.

Near houses 571 and 575 in company with *S. peregrinum*.

S. peregrinum. Prickly Comfrey. 2. EP.

Near houses 571.

Pentaglottis [Anchusa] sempervirens. Evergreen Alkanet. 1. J.

Disturbed ground by Peacedene.

Myosotis palustris. Forget-me-not. 5. CN-Q.

Occasional in ponds and wet places.

M. secunda. (*M. repens*). Creeping Forget-me-not. 2. NP.

Ponds, distribution not well known (1952).

M. caespitosa. Tufted Forget-me-not. 4. ANQR.

Ponds, distribution not well known (1952).

M. sylvatica. Wood Scorpion-grass. 3. NQR.

Probably escapes in N and Q and possibly R.

M. arvensis. Field Scorpion-grass. 6. ADO-R.

Rare in damp places.

M. discolor. (*M. versicolor*). Blue-and-Yellow Scorpion-grass. 3. QRS.

Occasional on ant-hills on plains.

Lithospermum officinale. Perennial Gromwell. 1. E.

572 (1943).

Convolvulus arvensis. Field Bindweed. 1. R.

Embankment 872.

Calystegia sepium. Hedge Bindweed. 9. DEM-S.

Occasional on the plains, becoming abundant on parts of Bank's Plain and parts of Division N, including some ponds, being particularly associated with *Epilobium hirsutum*.

C. sylvestris. 1. J.

Frequent on wire fencing along Mark Oak Path.

Hyoscyamus niger. Henbane. 2. OS.

By Five Halls, 8684 (1951).

Solanum dulcamara. Bittersweet. 16. A-EIJKM-T.

Frequent and locally abundant in damp and wet places.

S. nigrum. Black Nightshade. 4. DEMS.

Rare in disturbed ground.

S. tuberosum. "Potato". 1. Q.

Outcast.

Lycopersicon esculentum. "Tomato". 1. M.

On newly made-up path.

Verbascum thapsus. Great Mullein. 2. MN.

Very rare in disturbed ground.

Linaria vulgaris. Yellow Toadflax. 1. P.

Pathside 577.

Chaenorhinum minus. (*Linaria minor*). Small Toadflax. 1. N.

Below dam in I.O.W. Pond, submerged in winter (1952).

Cymbalaria muralis. (*Linaria Cymbalaria*). Ivy-leaved Toadflax. 1. M.

On newly made-up path, introduced with old bricks (1951).

Scrophularia nodosa. Knotted Figwort. 9. ACDEJKRST.
Occasional in woods.

S. aquatica. Water Figwort. 10. ADIN-T.
Occasional in wet places, especially along streams.

Digitalis purpurea. Foxglove. 12. A-HJKNT.
Occasional in woods, locally frequent, especially where recent clearing has taken place.

Veronica beccabunga. Brooklime. 6. BCJNOR.
Occasional in wet places.

V. scutellata. Marsh Speedwell. 3. NQT.
Occasional in I.O.W. and Bayfield Ponds. Var. *villosa* Schum. recorded for 58.

V. officinalis. Common Speedwell. 10. ADEIJMOPRS.
Occasional in short grass, very rarely in woods.

V. montana. Wood Speedwell. 4. BDIJ.
Occasional in woods.

V. chamaedrys. Germander Speedwell. 19. AC-T.
Frequent in woods and clearings and occasional on plains nearby.

V. longifolia. 1. Q.
Garden escape.

V. serpyllifolia. Thyme-leaved Speedwell. 14. ABDEG-JMNOQRS.
Occasional along grassy paths and on ant-hills on the plains and in the woods.

V. arvensis. Wall Speedwell. 6. NOPRST.
Occasional in short grass.

V. hederifolia. Ivy-leaved Speedwell. 1. C.
Hedgebank 351 (1952).

V. persica. Buxbaum's Field Speedwell. 4. DJMO.
Occasional in disturbed ground.

V. agrestis. Green Field Speedwell. 3. MNQ.
Rare in disturbed ground.

V. filiformis. 2. JQ.
By the White House and Peacedene, persistent in the former station.

Pedicularis sylvatica. Heath Red Rattle. 2. IM.
Rare in short grass. Abundant in a small disturbed area 915 and reappearing in small quantities, on the other side of S.E. Wood 836.

Euphrasia officinalis agg. Eyebright. 5. DMNST.
Rare in short grass. *E. anglica* has been recorded from 82, 188.

Odontites verna. (*Bartsia odontites*). Red Bartsia. 9. EM-T.
Locally frequent along grassy paths, especially on the plains. White-flowered forms have been recorded from O and P.

Verbena officinalis. Vervain. 2. ES.
A few plants near houses 575, and in grass near railway tunnel.

M. ? pulchrum. Pennyroyal. 1. Q.
Bayfield Pond (1942).

Mentha arvensis. Corn Mint. 8. JM-RT.
Occasional in grassy and damp places.

M. × verticillata. (*M. sativa*). Whorled Mint. 4. ANPT.
Rare in damp places.

M. aquatica. Water Mint. 9. CJN-T.
Occasional in wet places, locally abundant in ponds and hollows of N.

M. longifolia. Horse Mint. 1. Q.
Garden outcast.

M. × niliaca. Foxtail Mint. 1. Q.
Garden outcast.

Lycopus europaeus. Gipsywort. 9. ABCHN-QT.
Occasional in wet places, locally abundant in I.O.W. Pond.

Thymus serpyllum agg. Wild Thyme. 5. DOPRS.
Rare in short grass. That in D (188) is *T. pulchroides*.

Clinopodium [Calamintha] vulgare. Wild Basil. 1. R.
Grassy embankment 875.

Melissa officinalis. Balm. 1. J.
63.

Prunella vulgaris. Selfheal. 18. A-JM-T.
Frequent in grassy places, especially along paths.

Stachys officinalis. Wood Betony. 15. ADF-LN-RT.
Frequent at edges of woods, clearings, and woodland paths.

S. palustris. Marsh Woundwort. 5. N-R.
Locally frequent along streams.

S. sylvatica. Hedge Woundwort. 16. A-FJKM-T.
Very frequent at edges and open parts of woods and woodland paths.

S. × ambigua. Intermediate Woundwort. 1. O.
With parents *S. sylvatica* and *S. palustris* at edge of wood 445.

Lamium purpureum. Red Deadnettle. 6. JN-R.
Occasional in disturbed ground, especially at edge of Common.

L. album. White Deadnettle. 9. AEJN-S.
Occasional by hedges, edges of woods and streamsides.

Galeopsis tetrahit agg. Common Hempnettle. 4. JMOR.
Rare in grassy places.

Glechoma hederacea. Ground Ivy. 17. A-GIJM-T.
Frequent in open parts of woods and woodland paths, occasional on plains.

Scutellaria galericulata. Greater Skullcap. 1. N.
A small patch in U.E. Pond.

S. minor. Lesser Skullcap. 8. ABFGHKNT.
Local in damp woods, rarely elsewhere.

Teucrium scorodonia. Woodsage. 4. DHIM.
Woods, rare or overlooked.

Ajuga reptans. Bugle. 17. A-EG-NPRST.
Frequent in damp parts of the woods.

Plantago major. Greater Plaintain. 16. ACDEG-JM-T.
Very frequent on paths.

P. lanceolata. Ribwort Plantain. 13. ACDEKM-T.
Frequent in grassy places and on paths.

Campanula rotundifolia. Harebell. 9. DKN-T.
Occasional in grassy places.

Galium mollugo. Hedge Bedstraw. 3. NRT.
Very rare in grassy places.

G. verum. Lady's Bedstraw. 3. OPR.
Rare on plains or overlooked.

G. hercynicum. (*G. saxatile*). Heath Bedstraw. 15. A-EGKM-T.
Frequent in short grass but occasional on the plains in longer grass.

G. palustre. Marsh Bedstraw. 9. ADGMNPQST.
Occasional in ponds, rarely in other wet places.

G. uliginosum. Bog Bedstraw. 14. CEFHIKM-T.
Occasional on the plains and damp places.

G. aparine. Cleavers. 17. A-FHIJM-T.
Frequent at edges of bushy places in woods and on plains, especially along paths.

Sambucus nigra. Elder. 17. A-FHIJLN-T.
Frequent in woods and thickets. Var. *laciniata* occurs in Station Copse, alongside the common form and at 8655, 593 and 569.

Viburnum opulus. Guelder-rose. 3. AHM.
Woods, very rare or overlooked.

Symporicarpus rivularis. "Snowberry". 1. R.
Creeping from garden of Bookham Grange Hotel.

Lonicera periclymenum. Common Honeysuckle. 20.
Frequent in woods and thickets and occasionally under *Pteridium aquilinum* on plains.

Adoxa moschatellina. Moschatel. 1. A.
A twelve foot patch in damp wood 2734.

Valeriana officinalis. Great Valerian. 2. ON.

Locally frequent on plain 455, also occurs 445, 5865, the latter *V. cf. sambucifolia* (Elder-leaved Valerian).

Dipsacus fullonum ssp. *sylvestris*. Wild Teasel. 3. OPR.

Locally frequent by I.O.W. Ditch and Eookham and Bank's Streams.

Succisa pratensis. (*Scabiosa succisa*). Devil's-bit Scabious. 14. D-JMNOQ-T.

Frequent on damp plains and by damp paths in woods.

Helianthus cf. tuberosus. Jerusalem Artichoke. 1. Q.

Garden escape.

Bidens cernuus. Nodding Bur-marigold. 9. CDEJM-PR.

Occasional in wet places and locally frequent in ponds.

B. tripartitus. Three-cleft Bur-marigold. 3. NOP.

Rare by streamsides.

Galinsoga parviflora. Peruvian Galinsoga. 1. M.

One plant on chalk for track-making, 912.

Senecio jacobaea. Common Ragwort. 11. DG or HIJN-T.

Occasional in grassy places.

S. erucifolius. Hoary Ragwort. 10. DJM-S.

Locally frequent in grassy places and on plains.

S. squalidus. Oxford Ragwort. 1. Q.

By newly made-up path 811.

S. sylvaticus. Heath Groundsel. 3. MNT.

917, 587, 832 (1948).

S. viscosus. Sticky Groundsel. 1. T.

One plant on earth thrown up by Pit in E. Plain (1945).

S. vulgaris. Common Groundsel. 6. GMNOQR.

Occasional in disturbed ground. In July 1952 when I.O.W. Pond dried up plants were in flower in the middle amongst *Typha latifolia*.

Tussilago farfara. Coltsfoot. 7. EIMQ-T.

Rare in grassy places.

Calendula officinalis. "Marigold". 1. E.

Garden escape.

Inula conyzoides. Ploughman's Spikenard. 1. O.

41-44 near stream, 42 (1950).

Pulicaria dysenterica. Common Yellow Fleabane. 10. DJM-T.

Locally frequent on plains, in damp places and at edges of ponds and ditches.

Gnaphalium sylvaticum. Heath Cudweed. 1. D.

426 (1950).

G. uliginosum. Marsh Cudweed. 14. ACDEGHIKMOPRST.

Occasional in ruts in paths, on plains and in woods.

Solidago cf. canadensis. 5. EJMQR.

Usually single clumps near houses, but in wild conditions Station Copse.

Aster spp. "Michaelmas Daisies". 6. IJMNQT.

Garden escapes. Amongst those at Q is *A. cf. lanceolatus*. A plant occurs in the marsh immediately east of I.O.W. Pond.

Erigeron acris. Blue Fleabane. 1. S or T.

86 (1950).

Bellis perennis. Daisy. 9. DJM-PRST.

Occasional in short grass.

Achillea millefolium. Milfoil. 13. ACDEIKM-S.

Frequent in grassy places and on plains.

A. ptarmica. Sneezewort. 13. ADEGIM-T.

Locally abundant on plains, occasional elsewhere in grassy places.

Matricaria maritima ssp. *inodora*. Scentless Mayweed. 7. DEJMOPR.

Occasional in disturbed ground.

M. chamomilla. Wild Camomile. 2. EO.

Rare in disturbed ground.

M. matricarioides. (*M. discoidea*). Rayless Mayweed. 9. CEJM-R.

Occasional along paths in open.

Chrysanthemum leucanthemum. Ox-eye Daisy. 8. EIKNO-R.

Occasional in grassy places.

C. parthenium. Feverfew. 1. M.

On newly made-up path 91.

C. cf. uliginosum. 1. Q.

Garden escape.

Tanacetum vulgare. Tansy. 2. JN.

By houses.

Artemisia vulgaris. Mugwort. 3. I or NRS.

Rare by pathsides.

Arctium lappa. Greater Burdock. 4. DINO.

Occasional by paths in woods.

A. minus. Lesser Burdock. 6. DEJMOR.

Occasional by paths in woods. This and the preceding species not well understood and records may need revision. *Arctium* spp. also recorded from ACS.

Cirsium vulgare. (*Carduus lanceolatus*). Spear Thistle. 11. ADIM-T.

Occasional in grassy places.

C. palustre. Marsh Thistle. 20

Very frequent on the plains and in damp places.

C. arvense. Creeping Thistle. 12. CDEJM-T.

Frequent in grassy places and on plains.

C. dissectum. (*Carduus pratensis*). Meadow Thistle. 3. MST.

Fairly frequent on Eastern Plain amongst *Molinia caerulea*.

Centaurea nigra. Black Knapweed. 14. ACDEIKM-T.

Frequent in grassy places. Both subspecies *nigra* and *nemoralis* have been recorded from E.

Serratula tinctoria. Common Sawwort. 1. F.

Several plants on both sides of path in wood 554.

Lapsana communis. Nipplewort. 12. B-EJKMNP-S.

Occasional in damp shady places.

Hypochaeris radicata. Long-rooted Catsear. 13. BCDIJKMNOQ-T.

Occasional in grassy places.

Leontodon autumnalis. Autumnal Hawkbit. 5. ADMNT.

Grassy places, rare or overlooked.

L. hispidus. Common Hawkbit. 6. DIKNOR.

Rare in grassy places.

Tragopogon pratensis. Common Goatsbeard. 5. ENORS.

Occasional in grassy places. Probably all referable to ssp. *minor* which is definitely recorded for ORS.

Lactuca sativa. "Garden Lettuce". 1. J.

Garden outcast by Peacedene.

L. serriola. Prickly Lettuce. 1. P.

By newly made-up path 577.

Mycelis [Lactuca] muralis. Wall Lettuce. 1. D.

In open wood 1975-1985 (1946).

Sonchus arvensis. Corn Sowthistle. 8. JMNOQ-T.

Occasional on plains and in grassy places.

S. oleraceus. Common Sowthistle. 4. DJN P or Q.

Very rare in disturbed ground and grassy places.

S. asper. Rough Sowthistle. 8. DEJMO-R.

Occasional in disturbed ground and grassy places.

Hieracium—Section *Umbellata*. Narrow-leaved Hawkweed. 3. IJO.

Rare at edges of woods.

Hieracium—Section *Sabauda*. Broad-leaved Hawkweed. 2. IJ.

Rare at edges of woods. Specimens determined as *H. bladonii* by Dr. C. West.

H. pilosella. Mouse-ear Hawkweed. 13. DGI-PRST.

Occasional in grassy places, very locally abundant.

Crepis capillaris. Smooth Hawksbeard. 3. IRS.

Rare in grassy places.

Taraxacum officinale agg. Dandelion. 18. ABCEG-T.
 Grassy places, very widespread but nowhere very frequent.

T. laevigatum agg. 1. T.
 E. Plain (1946).

Alisma plantago-aquatica. Greater Water-plantain. 15. A-FHKN-T.
 Frequent in ponds and craters and rarely by streams.

Potamogeton natans. Floating Pondweed. 5. ACDNQ.
 Occasional in ponds and craters.

P. crispus. Curled Pondweed. 2. BN.
 U.E. Pond, crater 264.

Hemerocallis fulva. "Day Lily". 1. Q.
 Garden escape on bank of stream 491.

Asparagus officinalis. "Asparagus". 1. O.
 In grassy place 456 (1950).

Ruscus aculeatus. Butcher's-broom. 16. A-NST.
 Throughout the woods in deep shade but always in very small quantities.

Endymion nonscriptus. Bluebell. 11. A-GJQRT.
 Occasional in woods, very locally abundant in northern woods, e.g. by Kelsey's Pond.

Juncus tenuis. Slender Rush. 2. AS.
 256, Pit B (1952).

J. bufonius. Toad Rush. 16. A-KNOQST.
 Frequent on paths, especially in ruts of tracks in woods, rare in grassy places elsewhere.

J. inflexus. (*J. glaucus*). Hard Rush. 14. ADEGIJM-T.
 Frequent on plains, damp places and ponds.

J. effusus. Loose-flowered Soft Rush. 19. A-JL-T.
 Very frequent in damp places and ponds. Occasional on plains and in grassy places. Var. *compactus* frequent.

J. conglomeratus. Soft Rush. 15. ADEFHIJLN-T.
 Very frequent on plains, occasional in damp places.

J. acutiflorus. Sharp-flowered Jointed Rush. 8. EFMNQ-T.
 Occasional in damp places and alongside grassy paths.

J. articulatus. Shining-fruited Jointed Rush. 4. BDNT.
 Damp, especially bare places, rare or not distinguished from *J. acutiflorus*, which is much more frequent.

J. bulbosus. Lesser Jointed Rush. 2. BT.
 Crater 264, gun-pits on E. Plain, but may have been overlooked.

Luzula pilosa. Hairy Woodrush. 2. JM.
 Woods, very rare or overlooked.

L. campestris. Field Woodrush. 12. ABIJKMNOQ-T.
 Frequent in grassy places.

Narcissus spp. "Daffodil". 2. CJ.
 Garden escapes.

Iris pseudacorus. Yellow Iris. 5. JN-Q.
 Rare in ponds and streams.

Tamus communis. Black Bryony. 19. A-RT.
 Frequent in woods and thickets.

Epipactis helleborine. Broad-leaved Helleborine. 1. R.
 Clearing in thicket 875.

E. sessilifolia. (*E. purpurata*). Clustered Helleborine. 1. J.
 Wood 632, 397 (1943).

Listera ovata. Twayblade. 4. Q-T.
 Shady places and plains, four colonies only.

Orchis fuchsii. Spotted Orchid. 7. ADMNPQR.
 Occasional in grassy and wet places.

Orchis ericetorum. Heath Spotted Orchid. 1. T
 E. Plain 837 (1952).

Arum maculatum. Cuckoo Pint. 9. ADIJKNQRS.
 Occasional in shady places.

Lemna polyrrhiza. Greater Duckweed. 1. C.
Co-dominant in Sheepbell Pond with *L. minor*.

L. trisulca. Ivy-leaved Duckweed. 4. CNPQ.
Occasional in ponds.

L. minor. Lesser Duckweed. 8. ABCKMNPQ.
Occasional in ponds, rarely in other water, co-dominant in Sheepbell Pond.

Sparganium ramosum. Branched Burreed. 4. MNPQ.
Ponds, abundant in I.o.W., L.E., U.E., and S.E. Ponds.

S. simplex. Un-branched Burreed. 2. NQ.
I.o.W. and L.E. Ponds, Crater in centre of Bayfield Plain.

Typha latifolia. Broad-leaved Reedmace. 3. DNQ.
Crater 544, West Pond and I.o.W. Pond, a feature in the latter.

Eleocharis palustris. Marsh Clubrush. 3. NPQ.
Occasional in ponds.

Isolepis [Scirpus] setacea. Bristle Clubrush. 1. T
Pit B (1951).

Eleogiton [Scirpus] fluitans. Floating Clubrush. 1. B.
Crater 264 (1952).

Carex flava agg. Yellow Sedge. 4. GQST.
Damp places—craters 264, 736 and bare places—553 and 483, probably all referable to *C. demissa*.

C. sylvatica. Wood Sedge. 8. ABGI-LS.
Occasional in woods.

C. pendula. Pendulous Sedge. 1. R.
One plant in damp part of Station Copse.

C. panicea. Carnation Sedge. 2. ST.
In several places on E. Plain, also 852-3.

C. flacca. Glaucous Sedge. 13. D-GKM-T.
Frequent on plains and in grassy places.

C. pilulifera. Pill Sedge. 1. T
Rare on E. Plain.

C. caryophyllea. Vernal Sedge. 1. M.
Deturfed area 915.

C. hirta. Hairy Sedge. 15. AD-GIL-T.
Frequent on plains, in grassy places and in ponds.

C. nigra. Common Sedge. 5. ADNQT.
Occasional in wet places.

C. otrubae. (*C. vulpina* auct. angl.). Fox Sedge. 9. AEN-T.
Occasional and locally frequent on plains and in wet places.

C. contigua. Prickly Sedge. 1. P.
Pathside 571. Records from D and R probably also referable to this species.

C. remota. Remote-spiked Sedge. 8. ABDKNPQR.
Occasional in wet places in woods, locally abundant in swampy ground east from Kelsey's Pond.

C. ovalis. Oval Sedge. 13. ADEFHIN-T.
Frequent in grassy places, often abundant on grassy paths across plains.

Molinia caerulea. Purple Melic. 7. DLMQ-T.
Abundant over most of E. Plain and locally abundant elsewhere on the plains (see map)

Seiglingia decumbens. Heath Grass. 9. DEFHIQ-T.
Occasional in grassy places.

Glyceria spp. Floating Meadow Grass. 9. ACHM-R.
Frequent in wet places and ponds. *G. fluitans* appears to be most frequent.
G. plicata has been recorded from O and P and *G. declinata* from a rut in a track in C but these require confirmation.

Festuca arundinacea. Tall Fescue. 4. IKRS.
Very rare in grassy places.

F. gigantea. Tall Brome. 4. ABDF.
Rare in woods.

F. rubra. Red Fescue. 11. CDEIM-PRST.
Occasional on plains.

F. ovina. Sheep's Fescue. 4. ADMT.

Rare on plains. This species has probably been confused with *F. rubra* and records for both species may need revision.

Lolium perenne. Perennial Rye Grass. 12. ACDEGM-S.

Occasional in grassy places.

L. multiflorum. (*L. italicum*). Italian Rye Grass. 3. BCP.

Rare in disturbed ground.

Vulpia bromoides. Squirretail Fescue. 5. DIKPR.

Rare in short grass.

Poa annua. Annual Meadow Grass. 18. A-EGI-T.

Very frequent in bare places, paths and short grass.

P. nemoralis. Wood Meadow Grass. 5. BCDJL.

Occasional, but local in woods.

P. pratensis. Smooth Meadow Grass. 8. AIKNQ-T.

Occasional in grassy places.

P. trivialis. Rough Meadow Grass. 12. AC-FKLN-R.

Frequent in grassy places.

Dactylis glomerata. Cocksfoot. 19. AC-T.

Grassy places and by pathsides, widespread but nowhere very frequent

Cynosurus cristatus. Crested Dogtail Grass. 11. DEL-T.

Occasional in grassy places.

Briza media. Common Quake Grass. 4. MPQS.

Rare in grassy places.

Melica uniflora. Wood Melic. 2. AB.

Rare in woods.

Zerna ramosa. Hairy Brome. 10. AC-FI-LR.

Occasional in woods.

Z. erecta. Upright Brome. 1. R.

A doubtful record 872 (1951).

Anisantha sterilis. Barren Brome. 12. ACDEJM-S.

Pathsides and grassy places, widespread but never very frequent.

Bromus mollis agg. Soft Brome. 5. EMNRS.

Rare in grassy places.

B. commutatus. Smooth Brome. 1. O.

A doubtful record, requires confirmation.

Brachypodium sylvaticum. Wood False Brome. 18. A-NQ-T.

Very frequent in woods.

B. pinnatum. Heath False Brome. 1. D.

Clearing in wood 189.

Agropyron caninum. Tufted Couch. 2. BJ.

Wood B, by Peacedene in J, a few plants.

A. repens. Common Couch. 3. EMR.

Rare in grassy places.

Secale cereale. "Rye".

One plant 576 (1950).

Hordeum secalinum. Meadow Barley. 5. EOPRS.

Locally frequent on plains.

H. murinum. Wall Barley. 4. DJOP.

Rare by paths and in grassy places.

Hordeum sp. "Barley". 1. J.

Very rare in disturbed ground.

Koeleria gracilis. Crested Hair Grass. 4. KOPQ.

Locally frequent in short grass in several places.

Trisetum flavescens. Yellow Oat. 7. DEKNPRS.

Occasional in short grass.

Arrhenatherum elatius. False Oat. 15. AC-JLN-R.

Very frequent on the plains and frequent in grassy places elsewhere.

Holcus lanatus. Tufted Soft Grass. 20.

Frequent in open parts of woods and grassy places, locally abundant on parts of the plains.

H. mollis. Creeping Soft Grass.

Occurs in a copse on the western boundary of Q a few yards off the Common.

Deschampsia caespitosa. Tufted Hair Grass. 20.

Dominant over the greater part of the plains OPQRS, its only competitors being *Pteridium aquilinum* and scrub (see map). Very frequent elsewhere.

A viviparous form has been recorded in Central Clearing in G.

D. flexuosa. Wavy Hair Grass. 2. GT.

Woodland pathside 354, E. Plain.

Aira praecox. Early Hair Grass. 1. D.

426, 188-9 (1950).

A caryophyllea. Silvery Hair Grass. 1. D.

188-9 (1946).

Agrostis canina. Brown Bent Grass. 16. A-GJM-T.

Frequent in grassy places; where damp, var. *fascicularis* occurs being especially abundant in some ponds. The records for this and the following three species may need revision.

A. tenuis. Fine Bent Grass. 12. DGI-MP-T.

Frequent in grassy places.

A gigantea. (*A. nigra*). 1. R.

Grassy place, further distribution unknown.

A. stolonifera. (*A. palustris*). White Bent Grass. 8. CEKMNORS.

Occasional in grassy places.

Apera spica-venti. Silky Bent Grass. 1. M.

On recently made-up path 913.

Phleum nodosum. Bulbous Catstail Grass. 9. DEIKMNORS.

Occasional in grassy places.

P. pratense. Meadow Catstail Grass. 3. RST.

Rare in grassy places.

Alopecurus myosuroides. Slender Foxtail Grass. 1. E.

Disturbed ground 575.

A. pratensis. Meadow Foxtail Grass. 14. AC-FIKM-S.

Frequent in grassy places, often abundant on the plains.

A. geniculatus. Kneebent Foxtail Grass. 4. ANPR.

Rare in wet places.

Anthoxanthum odoratum. Sweet Vernal Grass. 18. AC-IK-T.

Very frequent on the plains and along woodland rides, occasional in other grassy places.

Phalaris arundinacea. Reed Canary Grass. 4. EMNO.

Damp places M and O. Escapes in E and N appearing to be the variegated form.

Nardus stricta. Mat Grass. 1. T.

Eastern Plain.

Vertical Zonation of some species of Birds in Oakwood, (Eastern Wood, Bookham Common.)

By S. H. CHALKE.

The vertical zonation of woodland bird communities has been investigated by M. K. Colquhoun and Averil Morley (1). It was thought that a study in Eastern Wood on similar lines, but necessarily much simpler in character and scope, might yield interesting results, although the time available and the number of visits possible would be very limited. Observations were therefore made by the author in the western part, some 18 acres in extent, on the Ecological Section's regular monthly visits and on some extra ones. The area is bounded on the south by

Hollow Path and on the west by Tunnel Path. The eastern boundary is irregular, being formed by parts of Broadway, Woodland Path and an unnamed path which runs from Woodland Path at Point 6483 north-west in a curve to join Tunnel Path at Point 5339. This part of the wood is fairly typical of the whole of Eastern Wood, which has been described by Dr. G. Beven (2, pp. 57-60).

Methods of working and presentation differ considerably from those used in (1). Each bird observed has been counted at the height at which it was first seen or, if first observed in flight, at the height at which it first alighted. Heights, which have been estimated, have been graphed in zones of 5 feet, without regard to zones of vegetation, against the number of observations in each month. The division of the graphs into months was suggested by the work of the Rev. P. H. T. Hartley (3). This has been done for four species, but the number of observations for Great Tit and Wren are too small to warrant this method. For the six species, however, the total number of observations for each zone has been graphed as a percentage of the total number of observations for the whole period, October to February. This non-breeding season was chosen, as in (1), so that the birds might be taken as occupying themselves chiefly with feeding, uncomplicated by other considerations such as courtship, nesting and feeding young. Breeding-season work was tried, but proved unsatisfactory, owing to the difficulty of making enough sight records in the time available during the months of heavy foliage. Nearly all the observations have been made between 1030 and 1300 hours, but are not otherwise related to time. Weather and temperature notes were made, but it has not been observed that either affects the heights at which these species live and move in winter. No work was done in heavy rain or high wind.

The number of observations in each case is small, and restraint is necessary in drawing conclusions from them. It is felt, however, that some tendencies have emerged. They are given below, but may have to be amended in the light of further study.

BLUE TIT. *Parus caeruleus* L.

Feeds mainly in the lower levels in October and November but at rather higher levels for the rest of the winter with more feeding in the canopy. During the whole period, it feeds fairly consistently over the entire range of zones up to 35 feet, but less so above that height. It is most evenly distributed in the latter part of the winter.

GREAT TIT. *Parus major* L.

Over the whole period, shows a preference for the lower levels from 0 to 15 feet.

LONG-TAILED TIT. *Aegithalos caudatus* (L.).

Feeds throughout the whole range up to the canopy, without monthly preferences. The variations in the percentage graph are not regarded

as significant. It is the only species of the six which was not recorded actually on the ground.

BLACKBIRD. *Turdus merula* L.

A bird of the lower levels, not using those above 20 feet very much. It seems to have no monthly preferences. Ground records are 40.8% and over 76% not higher than 10 feet.

ROBIN. *Erithacus rubecula* (L.).

Keeps almost entirely to the levels below 10 feet until the singing males go higher in February. No seasonal preferences other than the above are apparent. Ground records are 17.5%. It would be of interest to compare these ground records with those for garden habitats. In gardens where ground is cultivated near trees up to, say, 20 feet in height, the author, purely as an opinion unbacked by figures, would expect the ground records to show a higher percentage.

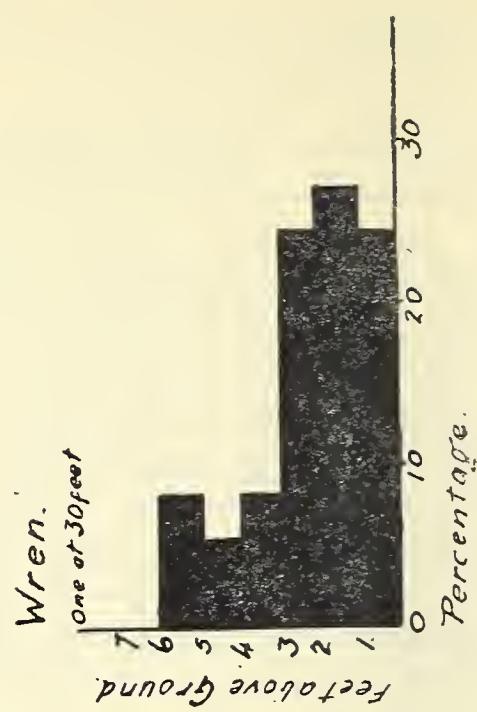
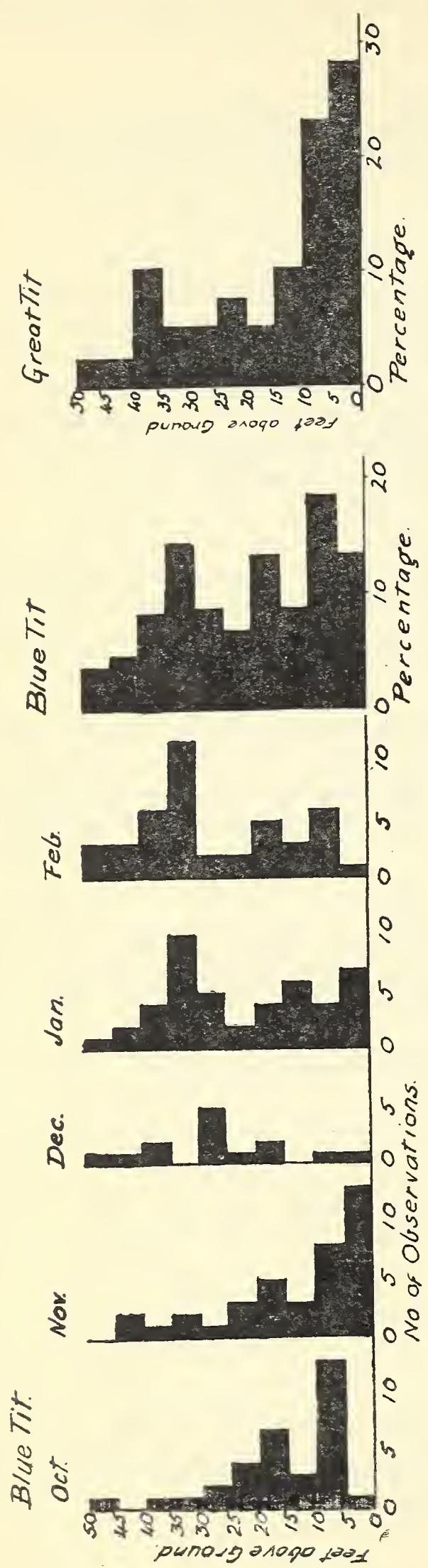
WREN. *Troglodytes t.* (L.).

This species is graphed in zones of 1 foot. Apart from one individual at 30 feet in November, this is almost entirely a bird of the 0 to 6 feet levels, with over 75% below 3 feet. Ground records are 24.3%. The species has suffered a decline in numbers since November 1952 in the area. The number of observations is very small.

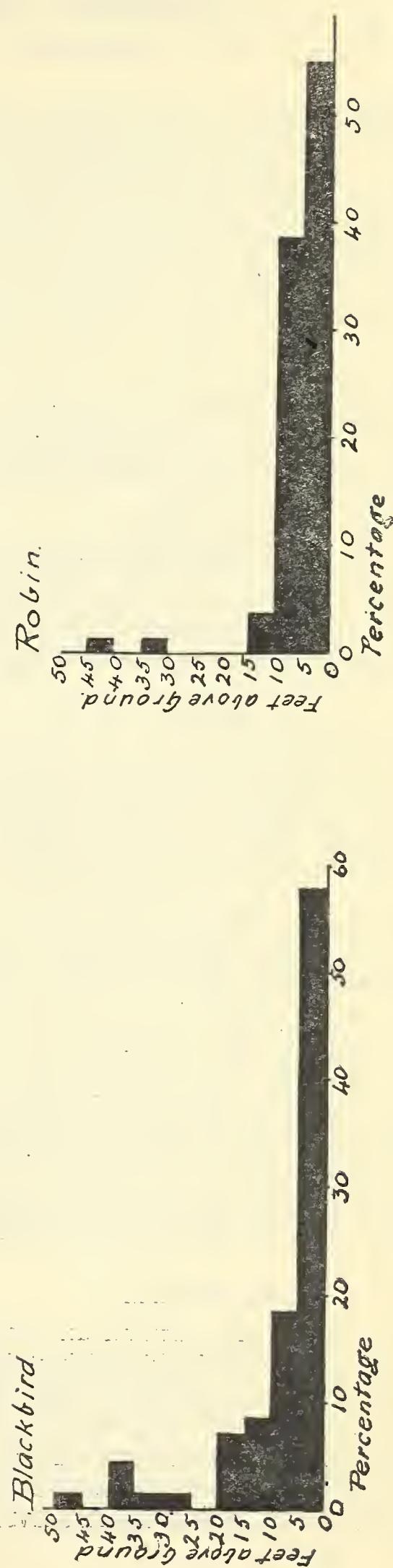
The author takes this opportunity of expressing his indebtedness and gratitude to the four authors whose works are cited in the references, to Dr. G. Beven and Miss E. M. Hillman for a great deal of kindly help, criticism and advice and to his wife for help in checking the manuscript.

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Wren.
One or 30 feet



Botanical Records for 1953.

Compiled by J. EDWARD LOUSLEY.

THE weather during 1953 in the London Area will not be remembered for any very exceptional conditions so far as botanical activities were concerned. Throughout almost the whole season plants suffered to a limited extent from a deficiency of moisture, and this was especially evident with early flowering species like *Trifolium striatum* on well-drained soils. A cold spell at the beginning of June retarded the flowering of some early summer species. The very mild autumn and the absence of severe frosts enabled work to be continued much later than usual.

The recording of plants has been carried on with enthusiasm during the year and many of the records sent in will appear in the *Hand List*. Only a selection of those of special interest can be included here.

V.-c. 16, WEST KENT.

A small colony of *Spiranthes spiralis* (L.) Chevall was discovered by Mr. and Mrs. R. Clarke near Biggin Hill growing about 80 yards inside the county boundary. H. M. Pratt has contributed another long and useful list of records of plants seen in a wide area round Dartford.

V.-c. 17, SURREY.

Lilium Martagon L. has long been known from Woodmansterne and from at least two stations near Headley. In 1953 it was found by P. R. Norman under the river-cliff below Box Hill, which is an entirely new locality and raises interesting questions about the manner in which this plant is distributed. A. W. Jones reports *Trigonella ornithopodioides* DC. from the golf course on Wimbledon Common. *Cotoneaster microphyllus* Wallich, which is found in very remote places on limestone in various parts of Britain, and is spread by birds which eat the fruits of plants of this shrub in gardens and then void the seeds, has been found by Miss B. M. C. Morgan on the downs west of Betchworth Lime-works.

Mrs. B. Welch reports *Potentilla argentea* L. and *Centaurium minus* Moench from Richmond Park, and also *Smyrnium Olusatrum* L. from Ham, where it grew by the Thames. As the latter is abundant on the towing-path at Hampton Court it is not unlikely that fruits had been carried down by the river. Another interesting Thames-side record is that of *Inula Helenium* L. found by Miss M. Matthews near Kew Bridge.

V.-c. 18, SOUTH ESSEX.

During the autumn an exceptionally rich hunting ground for aliens was found at Barking Municipal Rubbish-dump. This tip produced a few interesting plants in 1952 but a short visit by Mrs. B. Welch and D. McClintock on September 12th, 1953, indicated that it deserved thorough examination. Later visitors included Dr. R. C. L. Burges, R. Graham, S. T. Jermyn, J. E. Lousley, B. T. Ward, J. E. Woodhead, and Dr. D. P. Young and most of the botanists mentioned made several

visits. A preliminary list of the plants found includes over a hundred species and although we have endeavoured to attribute the records to the correct finders in the *Hand List*, it will be appreciated that this has not always been possible.

An interesting feature of this tip was the manner in which young plants of *Artemisia Verlotorum* Lamotte were scattered about all over it in a way which can hardly be explained other than by introduction by seed. The means by which this alien from the Far East has spread about the London Area has puzzled us for some years, as it does not flower until the end of October or November and it seemed unlikely that fruits would be able to ripen. The observations at Barking may throw some light on this problem.

Another exceptionally interesting plant was the dodder found by S. T. Jermyn and B. T. Ward which, with the help of Dr. Melderis, has been determined as *Cuscuta australis* R. Br. subsp. *cesatiana* (Bertolini) Fiori & Paoletti, which is new to the British list. Other species recorded include:—*Abutilon Theophrasti* Med., *Ambrosia artemisiæ-folia* L., *Centaurea diluta* Ait., *Datura ferox* L., *Galinsoga ciliata* (Raf.) Blake, *Heliotropium europaeum* L., *Lappula Myosotis* Moench, *Lolium temulentum* L., *Medicago Murex* Willd., *Nicandra Physalodes* (L.) Gaertn., *Rapistrum perenne* (L.) All., *Solanum sarrachoides* Sendtn., *S. triflorum* Nuttal, *Tagetes minuta* L., *Trigonella hamosa* L., *T. foenum-graecum* L., and *Xanthium spinosum* L. in very fine flower and fruit.

Enquiries made by Mr. Ward produced the information that the base of the dump was household rubbish from Barking, over which had been tipped material from Holborn and City bombed sites, and from excavations at East Ham, Dagenham and Barking. Sweepings from grain ships from various ports were dumped there, and these, with the "household rubbish", account for the presence of most of the aliens recorded.

A well established colony of *Iris* known to B. T. Ward for the last three or four years in Epping Forest near High Beach, has been identified as *I. versicolor* L.

V.-c. 20, HERTS.

All the segregates of Common Ladies' Mantle are rare in our area and the discovery of *Alchemilla vestita* (Buser) Raunk., determined by E. B. Bangerter, near Whippendell Wood is a very welcome addition. It was found on an L.N.H.S. excursion and the same party saw *Barbarea intermedia* Boreau in an arable field near Marlyn's Wood, near Watford.

V.-c. 21, MIDDLESEX.

Sisymbrium Irio L., the London Rocket, has been recorded annually by members from the vicinity of the Tower of London, and we have been watching the spread from the spot where it was first found with great interest. By 1952 it was known in some quantity both south and east of the original station and in 1953 A. W. Jones found it growing on a bombed site in Great Tower Street, which represented an extension

to the west. It was therefore with considerable regret that we heard that seeds had been sown deliberately in the churchyard of All Hallows, Barking, in a well-meant, but ill-advised, attempt to conserve the plant. Fortunately this is within the limits of the known area but with any new colonies which arise in the vicinity it will be impossible to say whether they come from the sown plants or from those which have spread without deliberate human intervention. During the year Mrs. B. Welch found *Sisymbrium Irio* in quantity on a rubbish-tip at Greenford.

Ophrys apifera Huds., the Bee Orchid, and *Orchis Fuchsii* Druce, the Spotted Orchid, were both found in abundance in old sand pits at New Year's Green by J. A. Haywood. Mrs. Welch discovered *Linum bienne* Mill. in a field near Hounslow Heath. This is only the second record for the county, the first having been made from Harefield by the same lady in 1947. In 1953 she found *Ricinus communis* L., the Castor Oil plant, up to five feet tall on Hounslow tip, and *Rhus typhina* L. on Hanwell tip. The last appears to be the first record for Britain of this shrub as a self-sown seedling.

D. H. Kent reports *Pimpinella anisum* L. from Hanwell tip, and he collected *Hordeum californicum* Covas & Stebbins, determined by Dr. Melderis as new to Europe, from the same place. Mrs. D. Bennett found *Ammi Visnaga* (L.) Lam. in fair quantity by Hounslow Heath tip. *Oenanthe Lachenalii* C. Gmel. is a native species, which is usually found in marshy places especially near the sea. E. B. Bangerter found it on a rubbish-tip at Hanwell, which is a very unexpected habitat.

Prior to its discovery at Barking as mentioned above, *Cuscuta australis* R. Br. subsp. *cesatiana* (Bertolini) Fiori & Paoletti was sent to the Natural History Museum and also to J. F. Shillito from a garden at Enfield, where it was parasitic in Chinese Asters.

We are grateful to the following for the contribution of records during the year:—E. B. Bangerter, Miss D. Bennett, R. A. Boniface, J. P. M. Brenan, K. E. Bull, Dr. R. C. L. Burges, Mr and Mrs R. Clarke, T. G. Collett, M. Collett, H. T. Corke, G. J. Davidge, A. E. Ellis, Miss D. Fitchew, R. Graham, P. Greenfield, R. M. Harley, J. A. Haywood, H. C. Holme, F. J. Holroyd, S. T. Jermyn, Miss L. Johns, A. W. Jones, D. H. Kent, D. McClintock, Miss M. Matthews, Miss J. Maude, Dr. A. Melderis, Miss B. M. C. Morgan, P. R. Norman, R. M. Payne, H. M. Pratt, J. F. Shillito, Mrs. L. M. P. Small, W. H. Spreadbury, B. T. Ward, Mrs. B. Welch, A. W. Westrup, J. E. Woodhead and Dr. D. P. Young.

The Comfreys of the London Area.

By E. B. BANGERTER and B. WELCH.

COMFREYS, with their white, blue or purple bell-like flowers in the one-sided clusters characteristic of the forget-me-not family (*Boraginaceae*), are usually recognised as such by even the beginner in botany. Specific distinction in the genus *Symphytum* is not so easy, however, and many do not appreciate that there are more species to be found than the common comfrey (*S. officinale*). True, this last is the only certain native in our area, but reference to the current part of the "Hand List" (see Supplement) will reveal the recording of five introduced species. *S. peregrinum* and *S. asperum* were introduced into this country early in the 19th century, for growing as fodder plants for cattle. *S. tuberosum* is much commoner in northern England and southern Scotland where it is believed to be native; in the London area it is possibly a garden outcast, as are also *S. orientale* and *S. grandiflorum*. The original home of the alien species is eastern Europe and western Asia, particularly the Caucasus. Other species besides these six have been found outside our area and we hope that this paper will encourage the production of further records; we should be very pleased to have specimens of any *Symphytum* sent to us at the Dept. of Botany, British Museum (Natural History).

The Key we provide makes use only of characters that may be readily seen in the field; the teeth of the calyx, which are of considerable diagnostic value, may be observed with the naked eye but the use of a hand lens is advised. We must emphasize that it is necessary to look at the whole plant as general habit is important, and the relative size of leaf on different parts of the stem also helps in identification. Colour of flower may help, but, being variable, should not be relied upon as a primary character. Most of these comfreys are roughly hairy but the type of hairiness is to some extent different in each species, proving a useful guide when "one's eye is in". Habitat, as may be expected when dealing with aliens, does not afford much help; most of them grow in hedgebanks, waste places and by roadsides. Flowering time may provide a clue to identification: *S. orientale* and *S. grandiflorum* are early spring-flowering species; *S. officinale* may be found throughout the summer, remaining in flower, with *S. peregrinum*, until August; *S. asperum* and *S. tuberosum* are usually midsummer-flowering. All the species are perennial and the leaves of all are undivided and more or less elliptic in shape.

Hybrids probably occur in the London area as they do elsewhere, but we have confined ourselves to describing species only, so far as we have been able to define them from herbarium specimens, field observations and literature. *S. peregrinum*, as understood by many botanists in this country, may be of hybrid origin and it is clear that the name has been used to cover a complex group, the unravelling of which, either taxonomically or morphologically, is beyond the scope of this paper.

S. asperum has proved elusive; of the material examined, only the specimens from Esher and Mickleham seem to be rightly named, others being referable to *S. peregrinum* or *S. officinale*. *S. grandiflorum* and *S. tuberosum* are most easily distinguished by their habit and *S. orientale* is differentiated from the others by many characters; these last three should not be difficult to recognize in the field.

KEY.

Stems much branched; lowest leaves the longest	
Teeth of calyx at least equal to its tube	
Upper leaves continuing in a wing down the stem (decurrent)	
	<i>officinale</i> (1)
Upper leaves not (or very slightly) decurrent	
Upper leaves sessile; calyx teeth acute	<i>peregrinum</i> (2)
Upper leaves shortly stalked; calyx-teeth obtuse	<i>asperum</i> (3)
Teeth of calyx half length of tube	<i>orientale</i> (4)
Stems more or less simple; lowest leaves shorter than mid-stem leaves	
Tall upright plants; basal leaves shortly stalked	<i>tuberosum</i> (5)
Short plants with creeping barren shoots; basal leaves on long stalks ...	
	<i>grandiflorum</i> (6)

DESCRIPTION OF SPECIES.

1. *Symphytum officinale* (Common Comfrey).

Generally distributed throughout the area, usually in damp places, by rivers, streams and ditches; it is a coarse branching plant, 2-3 ft. tall, occasionally reaching 4 ft. The stem and leaves are roughly hairy, sometimes with tuberculate bristles on the leaves. The lowest leaves may be nearly a foot in length and are larger than those above; the lower part of the blade of the uppermost leaves is continued down the stem in a wing in a very marked fashion, providing a character for recognition. The calyx-teeth are narrow and twice the length of the tube. It has a white or yellowish-flowered form and a pink or purplish form; a bright dark purple form has been named var. *patens*, which "has a different aspect" from the typical form, according to Syme, but with "no positive characters to separate it". The flowering period from May to August is the longest of all the species here considered. The black nutlets are shining and not covered with granules as in the other species. It is much relished by cattle and is still used in country places as a poultice.

2. *Symphytum peregrinum*.

Found almost as frequently as 1 in hedgebanks and at the edges of woods, this species is often confused with 1 and 3. It may be even taller than 1 and is rather more bristly in its hairiness. It differs from 1 mainly in having sessile upper leaves, which may be very slightly decurrent but do not provide the obvious wing as in 1. From 3, which has completely non-decurrent leaves, it differs also in the sharply-pointed calyx-teeth, which are twice the length of the tube. The leaf-shape seems

to be very variable, from narrowly to broadly elliptic with rounded, heart-shaped or gradually narrowing base. The corolla changes from pink to blue as it develops and as the flowers wither the calyx grows larger, a noticeable feature of this and 3, scarcely appreciable in 1. The flowering time is from June to August. Found abundantly in some of its Surrey localities and recorded from many Middlesex stations, it should be looked for in the other vice-counties of our area. There is a picture (no. 256) of this plant in Butcher and Strudwick's *Further Illustrations of British Plants*, 1930 and 1946; the term "calyx-scales" should read "corolla-scales" in the legend.

3. *Symphytum asperum*.

This has been confused with 1 and 2, having leaves that are somewhat similar in shape to some of those of the latter and with the same coloured flowers. The uppermost leaves, however, are not at all decurrent, being slightly stalked, a feature which distinguishes it from both 1 and 2. In height it may overtop the former. In older plants particularly, the more scabrid or harshly hairy nature of the pubescence is evident, a character responsible for the specific epithet. The calyx is smaller than in 2 and the teeth are blunt. It also has a shorter flowering time, June-July. We have not seen specimens recorded in the Hand List from v.-c. 17, Mortlake, or v.-c. 24, Iver, but the plant recorded from v.-c. 17, Esher, in Salmon's "Flora of Surrey" is, in our opinion, rightly named, although the specimen in the British Museum Herbarium consists only of the top of a plant. Also in Herb. Mus. Brit., in Boswell-Syme's Herbarium, there is a more complete specimen which answers to the description. This was gathered by Syme in 1854 at Mickleham. In *English Botany*, 1867, Syme says: "It also used to grow near Mickleham, Surrey, but in 1866 I could not find it in the station where ten years ago I collected it". We feel that these Surrey localities might be searched again for the species and that new localities in our area may well be found for it.

4. *Symphytum orientale*.

This branching plant, growing up to $2\frac{1}{2}$ ft., is distinct in a number of ways. The stem and leaves have the softest type of hairiness; the leaves are rounder in shape, with a rounded or heart-shaped base and the teeth of the calyx are half the length of the tube. The last is a good recognition character, as in all the other species under consideration the teeth are at least twice the length of the calyx-tube. The flowers are pure white and open in April and May, being at their best in the latter month. It is obviously of garden origin in our area and has been recorded mainly from Surrey with a few stations in Middlesex.

5. *Symphytum tuberosum* (Tuberous Comfrey).

This comfrey grows to about 2 ft. high and is not branched as the other species are, having stems either simple or only slightly branched at the top. It differs again in having the mid-stem leaves larger than those at the base, a character which can still be assessed at flowering

time, although the lowest leaves may be somewhat withered and require smoothing out. Its name arises from the fact that it has a stout tuberous rhizome or underground stem, the roots being fibrous; in the preceding species, the root itself is often thick and spindle-shaped. The plant is roughly hairy; the corolla yellowish-white. The narrow, sharply-pointed calyx-teeth are three times the length of the tube. The inflorescence is rather lax, so that the slender flower-stalks stand out more clearly than in the more crowded clusters of other species. It flowers from May to July. It has been well known on Stanmore Common for some years and is recorded from Kent and Surrey, where it is regarded as a "denizen"; the species is considered native in N. England and S. Scotland where it is frequent. See plate in current part of the *Hand List*.

6. *Symphytum grandiflorum*.

Occasionally found as a garden throw-out, this species differs most conspicuously in its habit. It is low-growing (up to 12 ins. high) with extensively creeping roots and decumbent barren shoots. The leaves are small, up to about 2 ins. long, round-based on long stalks, but as the plant gets older the leaves may become three or four times this length. It is roughly hairy. It flowers in April and May, the buds being brick-red and the opened corolla cream. The calyx-teeth are three times the length of the tube but are not so sharply pointed as in 5. We have seen specimens from Abbey Wood in Kent, but it is recorded from Surrey localities not far outside our area and should be looked for within.

Reference has been made to general British "Floras", including Syme's *English Botany*, Ed. iii, 1867, and Clapham, Tutin and Warburg's *Flora of the British Isles* (1952). Nomenclature follows that used in the *Hand List of Plants of the London Area*; common names for the two native British species are also in the *Hand List*, but for the alien species no common names seem as yet to be established and we feel that mere translations of the specific epithets would be misleading to the beginner. Works to which particular reference has been made are given below.

We wish to acknowledge with warmest thanks the help of Dr. A. Melderis and W. T. Stearn of the British Museum, and of D. H. Kent who has read the MS.

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Plant Galls in Surrey, 1953.

By M. NIBLETT, F.R.E.S.

1953 CANNOT be said to have been a good year for Plant Galls as regards individual species; I paid 52 visits to 29 localities and saw 131 different species of galls; many of the usually common species were seen only in very small numbers or not at all, a few species were locally or generally plentiful and several rare species new to the area were found.

HYMENOPTERA.

TENTHREDINIDAE:—The three species of Sawfly galls were found to be fairly numerous in all localities where they were searched for, *Pontania bridgmanni* Cam. on *Salix atrocinerea* and *S. caprea*, *P. proxima* Lep. on *S. alba* and *S. fragilis*, and *P. viminalis* L. on *S. purpurea*.

CYNIPIDAE:—Before listing these galls I had perhaps better state that the claim made by Beijerinck in 1902, that *Andricus circulans* Mayr was the alternate sexual generation of *Adleria (Cynips) kollari* Htg., has been substantiated by experiments carried out by Mr. E. M. Marsden-Jones and myself in 1948-49. so the Oak Marble Gall should now be known as that of *Andricus kollari* Htg.

Cynipid galls in the majority of cases were generally scarce, the spring galls on the oaks in particular; this was reflected by a similar scarcity of many of the autumn galls. The following species were seen:—On *Quercus cerris*—*Andricus kollari* Htg. form *circulans* Mayr. On *Quercus petraea*—*Andricus fecundator* Htg., *A. glandulae* Schck., *A. kollari* Htg., *A. ostreus* Gir., *A. solitarius* Fonc., *Cynips disticha* Htg., *Neuroterus albipes* Schck. f. *laeviusculus* Schck., *N. baccarum* L. f. *lenticularis* L., *N. numismalis* Oliv. On *Quercus robur*—*Andricus albopunctata* Schlcht., *A. corticis* L., *A. fecundator* Htg., *A. kollari* Htg., *A. ostreus* Gir., *A. quadrilineatus* Htg., *Biorhiza pallida* Oliv., *Cynips folii* L., *C. longiventris* Htg., *Neuroterus aprulinus* Gir., *N. baccarum* L. and f. *lenticularis* Oliv., *N. albipes* Schck. f. *laeviusculus* Schck., *N. numismalis* Oliv.; *Aulacidea hieracii* Bch. on *Hieracium sabaudum* agg. and *H. umbellatum* agg., *A. hypochoeridis* Kieff. on *Hypochaeris radicata*, *Aylax papaveris* Perris on *Papaver rhoeas*, *Isocolus rogenhoferi* Wachtl on *Centaurea scabiosa*; spiked galls of *Rhodites dispar* Niblett, *R. rosae* L., *R. spinosissimae* Gir. all on *Rosa canina*, *Xestophanes brevitarsis* Thoms. on *Potentilla erecta*, and *X. potentillae* Vills. on *P. reptans*.

DIPTERA.

CECIDOMYIIDAE:—Midge galls were scarce except a few species. Fair numbers of *Contarinia anthobia* Lw. and *Dasyneura fusca* Ruebs. were found on *Crataegus monogyna*, as also were *Contarinia corylina* Lw. on *Corylus avellana*, *C. scrophulariae* Kieff. on *Scrophularia nodosa*, *Har-*

mandia globuli Ruebs. and *H. loewi* Ruebs. on *Populus tremula*, *Janetella lemeei* Kieff. and *Physemocecis ulmi* Kieff. on *Ulmus glabra*. Three galls of *Harmandia populi* Ruebs. were found on leaves of *Populus tremula*; this is the third record for Britain. Also seen were *Anabremia viciae* Kieff. on *Vicia cracca*, *Contarinia barbichei* Kieff. on *Lotus corniculatus*, *C. helianthemi* Hardy on *Helianthemum chamaecistus*, *C. jacobaeae* Lw. on *Senecio jacobaea*, *C. lonicerearum* Lw. on *Viburnum opulus*, *C. solani* Ruebs. on *Solanum dulcamara*, *Craneobia corni* Gir. on *Cornus sanguinea*, *Cystiphora sonchi* Lw. on *Sonchus arvensis*, *Dasyneura brassicae* Winn. on *Brassica nigra*, *D. bryoniae* Bch. on *Bryonia dioica*, *D. crataegi* Winn. on *Crataegus monogyna*, *D. epilobii* on *Chamaenerion angustifolium*, *D. flicina* Kieff. and *D. pteridicola* Kieff. on *Pteridium aquilinum*, *D. fraxini* Kieff. on *Fraxinus excelsior*, *D. galeobdolontis* Winn. on *Galeobdolon luteum*, *D. polygoni* Ruebs. on *Polygonum amphibium*, *D. populeti* Ruebs. on *Populus tremula*, *D. pustulans* Ruebs. and *D. ulmariae* Br.-W. on *Filipendula ulmaria*, *D. similis* Perris on *Veronica chamaedrys*, *D. sisymbrii* Schrk. on *Barbarea vulgaris*, *D. spadicea* Ruebs. on *Vicia sepium*, *D. trifolii* Lw. on *Trifolium repens*, *D. urticae* Perris on *Urtica dioica*, *Diodaulus linariae* Winn. on *Linaria vulgaris*, *Geocrypta galii* Lw. on *Galium palustre*, *Hartigiola annulipes* Htg. on *Fagus sylvatica*, *Iteomyia capreae* Winn. on *Salix caprea*, *I. major* Kieff. on *S. atrocinerea*, *Jaapiella veronicae* Val. on *Veronica chamaedrys*, *Kiefferiana pimpinellae* Lw. on *Daucus carota* and *Silaum silaus*, *Lasioptera carophila* Lw. on *Daucus carota*, *Macrodiplosis dryobia* Lw. on *Quercus petraea* and *Q. robur*, *M. volvens* Kieff. on *Q. robur*, *Phlyctidobia solmsi* Kieff. on *Viburnum lantana*, *Placochela nigripes* Lw. on *Sambucus nigra*, *Rhabdophaga rosaria* Lw. on *Salix atrocinerea* and *S. caprea*, *R. salicis* Schrk. on *S. atrocinerea* and *S. purpurea*, *Rhopalomyia tanaceticola* Karsch on *Tanacetum vulgare*, *Rondaniella bursaria* Br.-W. on *Glechoma hederacea*, *Taxomyia taxi* Inch. on *Taxus baccata*, *Wachtliella persicariae* L. on *Polygonum amphibium*, *W. rosarum* Hardy on *Rosa* spp., and *W. stachydis* Br.-W. on *Stachys sylvatica*.

TRYPETIDÆ:—I have found galls of several rather rare species of Trypetids, *Ditricha guttularis* Mg. and *Oxyna flavipennis* Lw. on *Achillea millefolium*, and *Paroxyna misella* Lw. on *Artemisia vulgaris*. In 1952 I found several galls in flower-heads of *Carduus nutans*, but did not record them as I wished to breed the flies for confirmation of the species; they proved to be, as I expected, those of *Urophora solstitialis* L., a fly rarely captured and less frequently bred.

Other species seen were *Hoplochaeta pupillata* Fln. on *Hieracium umbellatum* agg., *Myopites blotii* Bréb. on *Pulicaria dysenterica*, *Urophora cardui* L. on *Cirsium arvense*, *U. jaceana* Her. on *Centaurea nigra*, and *U. stylata* F. on *Cirsium vulgare*.

HOMOPTERA.

PSYLLIDÆ:—*Aphalara nebulosa* Zett. on *Chamaenerion angustifolium*, *Psylla buxi* L. on *Buxus sempervirens*, *Psyllopsis fraxini* L. on

Fraxinus excelsior, and *Trichochermes walkeri* Först. on *Rhamnus catharticus*.

ERIOPHYIDAE.

Mite galls were seen in fair numbers but some species were rather late in appearing. *Eriophyes artemisiae* Can. on *Artemisia vulgaris*, *E. convolvens* Nal. on *Euonymus europaeus*, *E. dispar* Nal. on *Populus tremula*, *E. galii* Karp. on *Galium saxatile*, *E. gibbosus* Nal. on *Rubus fruticosus* agg., *E. goniorthorax* Nal. on *Craataegus monogyna*, *E. laevis inangulis* Nal. on *Alnus glutinosa*, *E. macrorrhynchus* Nal. on *Acer campestre* and *A. pseudoplatanus*, *E. origani* Nal. on *Origanum vulgare*, *E. pseudoplatani* Corti. on *Acer pseudoplatanus*, *E. psilaspis* Nal. on *Taxus baccata*, *E. pyri* Pagst. on *Sorbus aria*, *E. sanguisorbae* Can. on *Poterium sanguisorba*, *E. similis* Nal. on *Prunus spinosa*, *E. tilae liosoma* Nal. on *Tilia europaea*, *E. tristriatus erineus* Nal. on *Juglans regia*, *E. ulmi* Nal. on *Ulmus campestris* agg., *E. viburni* Nal. on *Viburnum lantana*, *Epitrimerus trilobius* Nal. on *Sambucus nigra*, *Phyllocoptes fraxini* Nal. on *Fraxinus excelsior*.

FUNGI.

Puccinia poarum Niel. on *Tussilago farfara*, *Phragmidium subcorticium* Schrk. on *Rosa arvensis*, *Taphrinia aurea* Fries. on *Populus tremula*, and *Urocystis anemones* Pers. on *Ranunculus repens* were the only fungus galls seen.

The London Clay of Oxshott, Surrey.

By M. M. BROWN and C. P. CASTELL.

THE pit of the Oxshott Brickworks Ltd. (formerly the Littleheath Brickyard) is $\frac{3}{4}$ mile S.W. of Oxshott Railway Station and 300 yards S.W. of Cook's Crossing (Nat. Grid. ref. 51/133162). Ground level is about 130 feet above O.D.

The London Natural History Society first visited the pit on October 27th, 1951, under the leadership of Dr. T. Barnard, and as nothing appeared to have been published about the pit it was suggested that an investigation of it might be undertaken by the Geological Section. Permission was kindly given by the Manager and visits have been made periodically by members of the Section over the last two years.

The pit is of interest in showing the fossiliferous sandy uppermost beds of the London Clay, exposures of which are now rare; it also shows the transitional stage from London Clay to the Bagshot Sands, which are well seen in the nearby pit on Oxshott Heath, 500 yards N. of Oxshott Station. Thin seams of sand appear in the clay and increase in thickness upwards, the clays becoming seams in sand until the beds are finally indistinguishable from the Bagshot Sands. These unfossiliferous beds were given the name of the Claygate Beds by Henry Dewey of the Geological Survey in 1912 (Dewey, 1912).

As a result of detailed investigations of the horizontal and vertical distribution of the fossils of the London Clay, A. Wrigley was able to recognize five faunal divisions in the London Clay of the London district (Wrigley, 1924, 1940). The fifth or uppermost division includes the sandy top beds well developed at Highgate, Tolworth, Claygate and New Malden. He considers the following to be characteristic fossils of this division:—

- Modiolus elegans* J. Sby.
- Glycymeris decussata* (J. Sby.).
- Tritonidea londini* Wrig.
- Volutospina nodosa* (J. Sby.).

It will be seen from the list of fossils that the fauna shows the London Clay at Oxshott to be a typical example of Wrigley's Fifth Division.

In this pit, a working face of grey sandy London Clay, about 30 feet deep and four times as long, has been exposed by an excavation, started some ten years ago, in the clay floor of an old pit where the overlying fifteen feet of rusty bedded loams of the Claygate Beds were formerly worked.

Fossils occur sporadically throughout the clay, but are usually too crushed and friable to collect; they are however in a better condition in the concretions which occur in the clay. These appear to be of two kinds: the usual London Clay septarian nodules and fissile sandy concretions. There is a band of the former about 15 feet from the top of the section; they are veined with yellow calcite, and contain well-preserved mollusca. The second type occurs as lenticular sandy concretions resting in hollows in the clay below, but becoming less sandy upwards where they merge into the clay. The fossils in these are worn and encrusted with polyzoa: concentrations of broken shell and of the polyzoon *Eucratea wetherelli* also occur.

Thanks are due to the enthusiastic collecting by members and to their generosity in handing over material to assist in drawing up the list of fossils, and especially to Mrs. B. Ainsley, Miss M. R. Bourne, Mrs. M. F. Everitt, Miss E. Wheeler, Messrs. R. E. Butler, E. Everitt, C. W. Pierce, B. Stoller, and J. Wyley.

In the list, after each species, will be found a rough estimate of its abundance, followed by the known distribution in the divisions of the London Clay and finally the symbol Cl. if the species has been recorded from Claygate (Dewey, 1923).

A representative series of specimens has been handed over to the Geological Department of the British Museum (Natural History).

LIST OF FOSSILS.

MOLLUSCA.

Lamellibranchia.

Glycymeris decussata (J. Sow.) (1). Abundant. 2-4, abundant in 5.

Modiolus depressus (J. Sow.). Common. 4, abundant in 5. Cl.
M. subcarinatus (J. Sow.)? non Lam. (2). Rare.

Musculus elegans (J. Sow.). Common. Abundant in 5.
Pinna affinis J. Sow. Occasional. 2-5.
Amusium corneum (J. Sow.). Common. 4-5. Cl.
Nemocardium nitens (J. Sow.). Occasional. 4, abundant in 5. Cl.
Pitar sulcarius (Desh.) [= *tenuistriatus* (J. Sow.)]. Common. 4, 5. Cl.
Cultellus affinis (J. Sow.). Common. 3, 5. Cl.
Teredina personata (Lam.) (3). Occasional. Cl. (as *Teredo* sp.).

Gastropoda.

Euspira glauccinoides (J. Sow.) (4). Common. 2-5. Cl. (as *Natica labellata* Lam.).
Turritella dixoni Desh. (5). Occasional. 5.
Tibia lucida (J. Sow.). Common. 3-5. Cl.
Ficus multiformis Wrigley. Common. 3-5.
Pseudoneptunea curta (J. Sow.). Rare. 4-5.
Streptolathyrus trilineatus (J. Sow.). (6). Rare. 3, 5.
S. zonulatus Wrigley. Rare. 4 (?), 5. Cl.
Euthrioetus complanatus (J. de C. Sow.). Common. 4-5.
Volutospina nodosa (J. de C. Sow.). Occasional. 5. Cl.
Conospirus concinnus (J. Sow.). Rare. 3-5. Cl. (Wrigley MS.).
Turricula stena (Edwards). Rare. 5.
T. teretium (Edw.) var. *nanodis* Edw. Occasional. 4-5.
 Cl. as *T. teretium*.

ANNELIDA.

"Worm".

Ditrupa plana (J. Sow.). Abundant. 2-5.

ECHINODERMATA.

Hemiaster, E41802

E52154^{a, b}. Brittle star. *Ophioglypha wetherelli* (Forbes). (7). Abundant in one sandy lenticle. 4, abundant in 5. See also E52164.

ARTHROPODA. Crab. *Clyphithyreus wetherelli* (Bell). Common.

POLYZOA (determined by Dr. H. Dighton Thomas).

Eucratea wetherelli (Busk). Abundant. 2, 5.

Membranipora eocena Busk. Rare. Cl.

M. tenuimuralis Gregory. Rare, encrusting gastropods.

FISH

Myliobatis sp.

Lamnid shark (imperfect tooth). Rare.

Teleost scales. Common.

NOTES ON THE SPECIES.

(1) Wrigley considers this an index species of division 5 when abundant and fully grown (15-20 mm. long). Here it is abundant but small. The average length of 32 specimens, freed from the matrix, is 11.0 mm., only one specimen reaching 13 mm. The species was not recorded by Wrigley for Claygate.

(2) One large specimen (8·5 cms. in length) was collected and is closely comparable with that from Highgate figured by J. Sowerby under this name. It is, however, doubtful if any of the specimens from this country have been correctly identified.

(3) Most of the records of *Teredo antenautae* refer to *Teredina personata*, a species ranging from the Woolwich Beds to the Bracklesham Beds. *Teredina personata* (Lam.) = *Teredo antenautae* J. Sowerby 1815, Mineral Conchology, I, p. 231, pl. 102, figs. 1-4, *not* figs. 5-8. See discussion by Wrigley, 1930.

(4) This has often been listed as *Natica labellata* Lam., but that species has been shown to be confined to the Bracklesham Beds (Wrigley 1949).

(5) This species is widely distributed in the London Clay of the Hampshire Basin, but in the London Basin, E. of Egham, has previously been known only from Highgate.

(6) Most of the earlier records under this name refer to *S. zonulatus* Wrigley.

(7) This, or a closely allied species, is known also to occur rarely in the sandy Basement Bed of the London Clay (Northwood; Kidner 1909, and specimens from Pinner in the Museum of the Geological Survey and from North Harrow in the British Museum (Nat. Hist.)).

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Reports on Temporary Geological Exposures in the Society's Area.

THE following reports are the fifth selection to be published in the *London Naturalist* and the thanks of the Society are due to those members who assisted in their preparation. Their work constitutes a valuable contribution to the geology of our area.

The thanks of the Society are also tendered to the owners of properties, their architects and contractors, for so willingly permitting the records to be made and for their practical help and co-operation in many ways.

Comments on these reports or further information which may be of use to the investigators are invited.

Co-operation in this interesting research or information regarding the location of deep excavations within the Society's area will be welcome.

M. AINSLEY

(*Recorder for Temporary Geological Exposures*).

LONDON W.C.

L.N.H.S./T.E./56/53. LONDON W.C.1.

GREAT RUSSELL STREET. Excavation for the erection of Trade Union Council Memorial Building bounded on the north by Great Russell Street and on the east by Dyott Street. When examined in September 1953 no measurements were possible owing to the method of excavating obscuring the section. The Contractors kindly supplied the following details:—

Measurements from street level (85·32 ft. above Newlyn datum).

			Thickness.	Depth.		
			FT.	IN.	FT.	IN.
4.	Made Ground	...	10	0	10	0
3.	Gravel	...	10	0	20	0
2.	Brown Clay	...	1	6	21	6
1.	Blue (London) Clay	...	28	8+	50	2
			50	2		

A band of flattened septarian nodules was said to be present in the London Clay. No fossils were found.

Bed 3 contained large and medium angular flints (one measured 8 inches × 5 inches) and included lenses of fine yellow sand. A band of black clay 1 inch in thickness was also noted in this bed.

B. AINSLEY.

LONDON S.E.

L.N.H.S./T.E./58/53. LONDON S.E.6.

MANWOOD ROAD, BROCKLEY, between No. 66 Manwood Road and its junction with Bexhill Road, Nat. Grid Ref. (Sheet 171) 370744, examined in September 1952.

Excavations in connection with the G.P.O. have revealed exposures of the Woolwich Shell Beds. These deposits, which form a continuation of those described at Brockley Grove (L.N.H.S./T.S./19/50), showed the 'Paludina' bed, which was to be seen in the past at New Cross and Nunhead, but exposures of which are now rare.

The section investigated consisted of a shored trench, and it was impossible to take any measurements. The description of the section is as follows:—

BLACKHEATH BEDS.

4. (Top) Light brown calcareous sand with flint pebbles. Very poorly exposed.

WOOLWICH BEDS.

3. Brown highly calcareous sandstone with decomposed shells including *Viviparus* [*Paludina*] sp. cf. *lentus* (Brand.) and *Ostrea bellovacina* (Lamk.).

2. Light brown sandy clay with many decomposed shells (mainly *Cyrena*). Carbonaceous streaks in the clay and some impressions of plant material.

1. Dark blue stiff clay. Few fossils. Base not seen.

The whole section is between eight and ten feet in thickness.

S. A. J. POCOCK.

LONDON S.W.

L.N.H.S./T.E./59/53.

LONDON S.W.1.

DEAN FARRAR STREET, TOTHILL STREET. Excavation for Federation of British Industries building situated on the east side of Dean Farrar Street.

The following section was seen in the autumn of 1953:—

(Measurements from ground—approximately pavement—level)

Bed		Thickness.	Depth.		
			FT.	IN.	FT.
7.	Made Ground cutting into bed 6 ...	{ 6	0	6	0
6.	Sand	{			
5.	Black Clay (River Mud)	3	2	9	2
4.	Peaty Black Clay	1	4	10	6
3.	Blue-Grey Sandy Clay	4	6	15	0
2.	Clayey Sand	6	0	21	0
1.	Gravel	11	0+	32	0
		32	0		

Bed 3 was sandy and unstable; the mineral Vivianite (confirmed by Mr. S. E. Ellis) and *Ostrea edule* were noted. It has been suggested that this deposit may be partly composed of re-worked Reading beds.

Bed 4 consisted of a persistent bed of Peat in which were found twigs and roots, the latter often penetrating into the underlying Clay; specimens collected from this bed are awaiting determination.

Bed 5 contained large numbers of freshwater shells, and the following list has been supplied by Mr. C. P. Castell from samples passed to him for determination:—

Bithynia tentaculata (Linné).

Lymnaea peregra (Müller), common.

Planorbis corneus (Linné).

P. planorbis (Linné), common.

P. vortex (Linné).

P. leucostoma Millet.

Sphaerium corneum (Linné).

Valves of *Ostrea edulis* (Linné), *Mytilus edulis* (Linné), *Cardium edule* (Linné) and *Buccinum undatum* (Linné), all doubtless thrown in by contemporary man, were also present.

Bed 6 has been mostly removed during earlier building operations. Samples of beds 2, 3, 4, 5 and 6 have been retained.

A report appeared in "The Times" of 8th October 1953 concerning this site. It was stated that no pottery or coins have been found in the Peat by which the deposit could be dated. A small piece of leather found by the undersigned, not *in situ* but apparently from the Peat bed or the Black Mud, awaits examination.

It would seem that the area, lying in close proximity with the River Thames, was subject to periodical flooding. Quantities of vegetation would be brought down by the flood waters and much of it would be trapped in shallow pools and back-waters where it would eventually sink. It is suggested that the Peat bed (bed 4) represents the accumulation from many such inundations. A large rounded flint, 7 to 8 inches across, seen in the Peat was most likely carried there entangled in the roots of an uprooted tree. No shells were seen in the Peat due, possibly, to the water being too acid to support them. The Black Mud immediately above, however, contained numerous shells and must represent a longer period of inundation during which the river flowed freely with a plentiful supply of fresh water.

The area is mapped as Alluvium by the Geological Survey (six inch London sheet N.V., S.W.) and it is suggested that beds 2 to 6 should be included under this heading (Holocene in age) while bed 1 is undoubtedly Plateau Gravel (Pleistocene). It is hoped to make the final relations of these deposits the subject of future study when more evidence is available from neighbouring sites.

B. AINSLEY.

LONDON W.

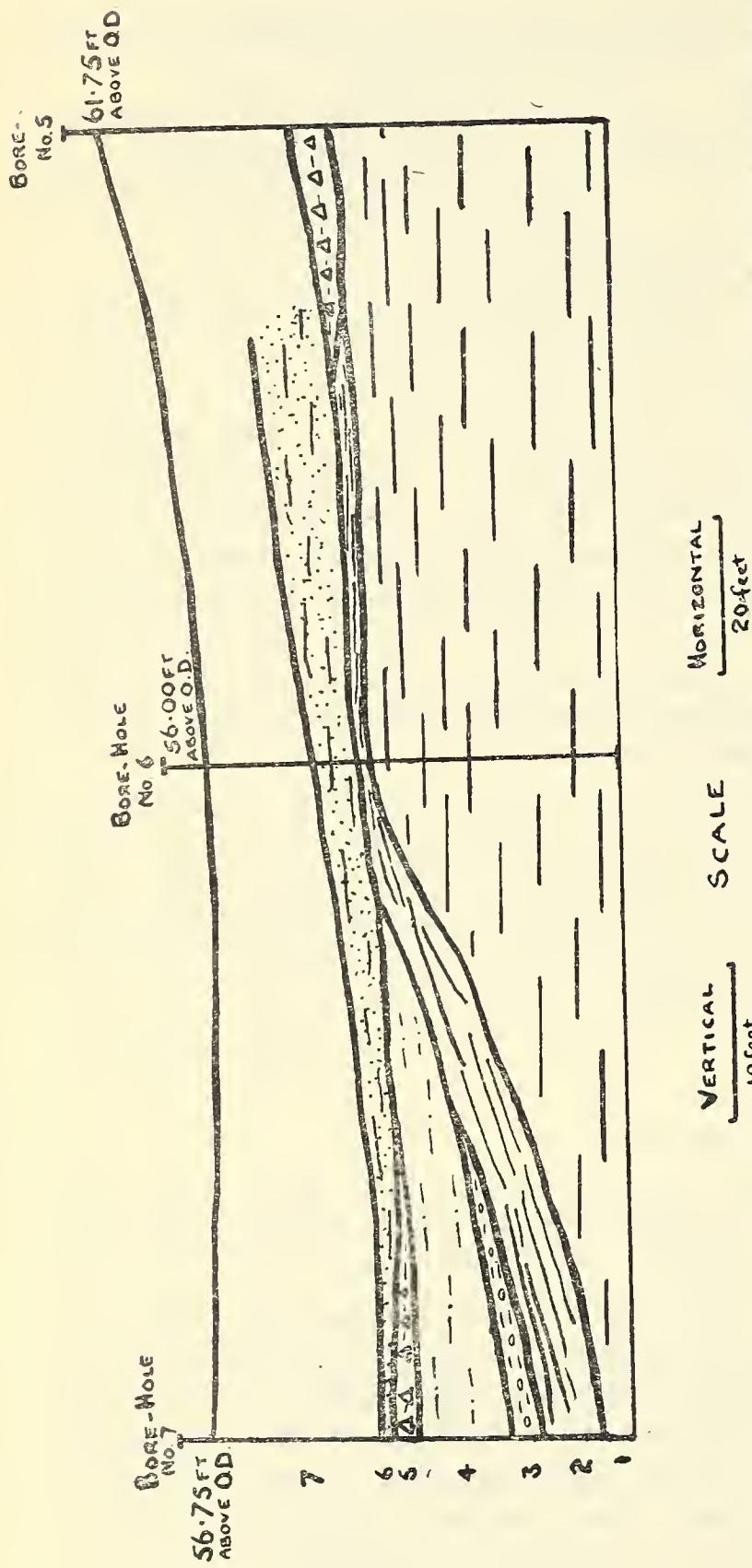
L.N.H.S./T.E./57/53. LONDON W.1.

BOND STREET. At the junction of the east side of Bond Street and the south side of Conduit Street. Excavation for a new Hotel examined in the autumn of 1953.

Alluvium resting on London Clay. The Alluvium consisted of a series of gravels and clays, none of which appeared to be constant over the whole site, resting on a sloping surface of London Clay. The section shown at fig. 1 is based on information obtained by the contractors from trial bore-holes. No fossils were obtained from any of the deposits but shell fragments were noted in the London Clay (*Bed 1*) where also small scattered septarian nodules were present.

Bed 2. Brown Clay has been included in London Clay in the key but part at least may be alluvium.

Bed 3. Claystone was not seen but it has been described by the Resident Engineer (Mr. Jones) as "Chalk-like" in appearance and not particularly hard."



**Fig. 1. Section across northern edge of site (E.W.) of New Hotel being erected at the junction
of Bond Street and Conduit Street, W.1. (L.N.H.S./T.E./57/52)**

Bore-holes situated along the northern side of the site.

Thickness
Bore Holes

Bed	No. 7	No. 6	No. 5
	FT. IN.	FT. IN.	FT. IN.
7. Made ground and old building foundations	11 0	7 0	13 0
6. Clayey Gravel	1 0	(absent)
5. Mud and Stone	1 6	(absent)
4. Brown Clay	9 6	(absent)
3. Claystone	2 0	(absent)
2. Brown Clay	4 0(+)	1 0
1. London Clay (not reached)	17 0(+)

Bed 4. Brown Clay contained a number of small round flint pebbles in places.

Bed 5. Mud and Stone had a muddy and dirty appearance and may well represent a soil bed. No organic remains were noted.

Bed 6. Clayey Gravel contained irregular water-worn flint pebbles of medium size—the majority being from one to two inches in diameter. This bed was rather sandy in places and the clay content also varied considerably.

The site is situated on the eastern slope of the valley of one of London's buried rivers, the Tyburn (or Ty Bourne) stream, which rose in South Hampstead and flowed southwards to join the River Thames at Westminster (1). This stream cut through the Taplow Terrace Gravel into the London Clay. The Alluvium described in this report was deposited in the valley by the Tyburn and by a small tributary which, flowing from the east, joined it at this spot. This tributary, which ran approximately parallel and ten feet to the south of Conduit Street, was about eight feet across and four feet deep. It is suggested that this channel may be an alternative course of a tributary recorded as lying about 150 feet to the south of the present excavation (2).

REFERENCES.

(1) 1922, Chatwin & Bromehead, "Geology of the London District", pp. 77—
Mem. Geol. Surv.
(2) Six inch Geol. Surv. Map, London, Sheet N.V., S.W.

B. AINSLEY.

HERTFORDSHIRE.

L.N.H.S./T.E./54/53. BUSHEY, HERTS.

HILFIELD PARK RESERVOIR, c. $1\frac{1}{2}$ mi. W.N.W. of Elstree, Herts. Four rectangular trial holes dug on site of reservoir during its construction. Information about these and the excavation at Bushey Heath, below, kindly supplied by the contractors (Messrs. John Taylor & Sons) from the records of their Resident Engineer. Ground levels are expressed as heights above O.D. (Newlyn). No fossils were found.

Trial-hole No. 4. 270 ft. 35° from intersection of Watford By-pass and Hilfield Lane. Ground level 305·0 ft. O.D.

			Thickness	Depth		
			FT.	IN.	FT.	IN.
<i>Drift</i>	{	5. Topsoil	1	0	1	0
		4. Light brown clay with stones	2	0	3	0
<i>London Clay</i>	{	3. Light brown mottled clay, gypsum crystals ...	9	0	12	0
		2. Medium mottled brown clay, gypsum crystals ...	6	0	18	0
		1. Hard brown clay inter- spersed with 6 inch clay- stone beds	2	0+	20	0

J. F. WYLEY.

L.N.H.S./T.E./55/53. BUSHEY HEATH, HERTS.

Excavation for small reservoir of about two acres, in the N.W. corner of Alpine crossroads, Bushey Heath, Herts., at 503 feet O.D.

		Thickness	Depth
Pebble Gravel	4. Top Soil	1ft.	1ft.
	3. Gravelly clay ...	10ft.-14ft.	11ft.-15ft.
	2. Pale yellow sandy clay with numerous thin laminations ...	9ins.-2ft.	11ft. 9ins.-17ft. 0ins.
London Clay	1. Dark blue silty clay 5ft. +	16ft. 9ins. +	22ft. 0ins. +

Features worthy of note are the unweathered condition of the London Clay below the Pebble Gravel and its uniform silty nature; also the persistent layer of pale yellow sandy clay at the base of the Pebble Gravel. The surface of the London Clay is somewhat undulating but on the average, level.

This may be compared with a somewhat similar one described near this locality by J. Prestwich in the *Quarterly Journal, Geological Society*, 1890, No. 46, p. 166.

J. F. WYLEY.

The Climate, 1953.

By H. HAWKINS.

(Observed at 119 Beresford Road, Chingford.)

READINGS FOR THE YEAR 1953.

BAROMETER.

Maximum for the year ... 30.80 on Mar. 10th

Minimum for the year ... 28.50 on Feb. 10th

Average for the year 29.99

TEMPERATURE.

	SCREEN	GRASS (Night Min.)
Maximum for the year ...	91 on Aug. 12th	62 on Aug. 30th
Minimum for the year ...	21 on Feb. 7th	19 on Feb. 7th & 8th
Average maximum	58.55	
Average minimum	43.67	
Average for the year	51.11	40.50
Average daily range	14.88	
Maximum range	70	

RAIN.

19.70 inches recorded compared with the Chingford yearly average of 24.92 inches. Rain fell on 140 days of which 97 are classed as Wet Days. The largest falls occurred :—

0·84	April 30th
0·75	July 31st
0·62	Oct. 12th

It will be seen that the year was dry as a whole with a deficiency of over 5 inches.

GENERAL OBSERVATIONS.

The year 1953 was no exception to the saying that each year establishes new records.

January.

The driest for England and Wales since 1858, only 0·97 inches being recorded against the Chingford average of 2·18 inches. The great gale which caused the disastrous floods on the East Coast occurred on the 31st.

February.

Generally a mild month with a maximum temperature of 60 degrees on 27th. The last nine days were rainless.

March.

The drought of late February continued into March, and by the middle of the month a state of absolute drought existed. The March rainfall in Chingford was under $\frac{1}{2}$ inch. It was the longest absolute drought in London so early in the year since 1893.

April.

Very changeable weather with rainfall above average. The average temperature was below normal, and Easter weekend was a poor one with rain and sleet accompanied by thunder on Easter Monday.

May.

Again changeable weather with cool nights. However the Whitsun weekend at the end of the month produced an exceptionally warm spell with maximum temperatures of 82 degrees on Whitsunday and 87 degrees on Whitmonday.

June.

Started with a cold northerly wind which swept southwards on Coronation Day (2nd) and the maximum temperature on the 3rd reached only 53, which is about 10-15 degrees below normal. The end of the month was, however, much warmer.

July.

A wet month with rainfall over an inch above average. There were very few really warm days.

August.

Provided compensation for the cold changeable weather of June and July. It was the sunniest August since 1947, and the first fortnight

had scarcely a break in the sunshine. The highest temperature of the year (91) was recorded on 12th. The first 14 days were rainless.

September.

From 5th-15th it was rainless and this period provided high temperatures for the time of year. Sunshine was much above average.

October.

Sunshine was plentiful until 11th and no rain fell during this period. Most nights were relatively mild and free from air frost.

November.

Rainfall was $1\frac{1}{2}$ inches below normal and during the middle of the month there were 10 days without rain. It was very mild, probably the mildest November this century.

December.

Rainfall nearly 2 inches below average. It was the mildest December since 1934 (which was the mildest for over 200 years).

Feasts and Feastings in Olden Days.

By W. C. COCKSEdge.

IT is recorded in Domesday that Tezelin, the cook, held the Manor of Addington, Surrey, by the tenure or service of presenting a mess of pottage to the sovereign at his coronation feast. Unhappily, although it bore the intriguing name of Maupygernon, we seem to be ignorant of its composition. Nevertheless, the manor was duly held through the ages *per serjeantiam coquinam*, the nature of the dish varying from coronation to coronation according to changing ideas of cookery. Three messes were to be prepared, one for the King, one for the Archbishop of Canterbury, and the third for whomsoever the King willed. So it continued until the coronation of George IV when Manners-Sutton, the archbishop who was then, himself, Lord of the Manor, by virtue of possession of Addington Palace which had by then become the official residence of the archbishops, claimed to serve his sovereign with the fabulous pottage. The claim was duly allowed but whether the King and he partook of it and what were the ingredients, I do not know. Anyhow, the custom then fell into desuetude. In earlier days, the dish seems to have been called "Diligrout", the name for a sort of porridge, but it is pleasanter to assume, as one antiquary suggests, that it was equivalent to "Bardolf", a famed confection of the Middle Ages, said to have been composed of almond milk, brawn of capons, chickens par-boiled and chopped, sugar, spice, etc.

This leaves one a pleasant idea of Medieval cookery, an art in which fantasy had full play. Even the names of the dishes had a piquant savour—Maupygernon, diligrout, blandyssorie, egredoucyte, flampoynetes,

chawettys, pocerounce and march-pane, tickle the eye if not the appetite. We notice in "march-pane", mentioned in *Romeo and Juliet*, a forerunner of marzipan. But these dishes were of course the efforts of aspiring cooks to garnish the table and we are not far wrong in thinking that the produce of the chase bulked largely in the dietary of the king and his nobles.

In olden days, there was a catholicity of opinion as to what was palatable or even edible. We must remember however that the uncertain conditions of life, the absence of quick transport and conveniences for keeping perishable food fresh, impelled even the rich to live largely on salted or pickled viands. As cattle had to be slaughtered wholesale in autumn in the absence of winter keep, vast stores of smoked beef were accumulated in the cellars of the nobles for the winter fare of their retainers. "Hence", as Gilbert White remarks, "the marvellous account of the vast stores of salted flesh found in the larder of the eldest Spencer in the days of Edward II, even as late in the spring as the 3rd May, viz., 600 bacons, 80 carcases of beef and 600 muttons." Andrew Borde considered this hanged beef more useful as a waterproof than as a food, for "if a man have a piece hanging by his side and another in his belly, that the which doth hang by the side shall do him more good if a shower of rain do chance than that which is in his belly".

The produce of the chase naturally figured largely in the bill of fare of the Royal Household and the great nobles. Salzman, to whose labours I am much indebted, quotes a letter from Queen Eleanor of Provence, widow of Henry III, thanking her son, King Edward, for a present of cranes which she had found very fat and good. It would seem that the taking of cranes was the summit of the hawker's ambition and the King gave lavish rewards to the messengers who brought him the heads of cranes which his hawks had captured. In 1290, when a servant brought him the head of a crane which his gerfalcon "Calemare" had taken in Lindsey, the man was rewarded with six shillings and eightpence. The locality is interesting as cranes still bred in Lincolnshire even in Tudor times. An edict of Queen Elizabeth forbids the taking of the eggs of the crane in the West Fen, north of Boston. Strangely, the heron is now called the crane in this district—but this is a digression. For rather obvious reasons, we do not know the possibilities of Crane as a dish but we may surmise that Heron, another favourite quarry, was far from enticing. Perhaps it was eaten by the royal hawkers in the spirit in which a schoolboy insists on eating his catch of fish although unpalatable.

Bustard might seem to offer gastronomical possibilities although I have not found it mentioned, but among domestic fowl, Swan and Peacock were much esteemed. Swans are in part royal birds, the moiety (on the Thames) having been owned by the Dyers' and Vintners' Companies from earliest times. I am not sufficiently an ornithologist to know whether wild swans ever bred in England: I think not. It has been objected that Swan is rather "fishy" but the Earl of Ilchester writing recently in the *Daily Telegraph* states that swans do not eat fish and that the muddy flavour is eliminated in the Abbotsbury swans

by bringing them up from an early stage in pens and feeding them with grain and other selected food. Anyhow, our ancestors did not object apparently to an element of "fishiness". Regarding the peacock—with the love of display inherent in the medieval mind, it was served in "hakille ryally" that is, with its gorgeous feathers replaced on the roasted bird for I do not think we can suppose that it was actually cooked in its plumage.

A "Peacock Feast" is depicted in the bottom border of the magnificent brass to Robert Braunche and his two wives at King's Lynn. Of this scene, Cotman wrote, with a slight touch of hyperbole, "a feast that for the splendour of the table and the company, the band of music and the attendants, might pass for some grand anniversary celebrated in this wealthy town. Among the delicacies of the splendid table one sees the peacock, that noble bird, the food of lovers and the meat of lords. Few dishes were in higher fashion and there was scarce any royal or noble feast without it. The honour of serving it up was reserved for the ladies, most distinguished by birth, rank or beauty, one of whom, followed by others and attended by music, brought it up in the gold or silver dish and set it before the master of the house or the guest most distinguished for his courtesy or valour." In this brass, a lady bears the peacock with its "tail" feathers extended, another follows playing a flute and two further attendants blow long horns with banners attached. As the brass is of foreign workmanship, the artist most probably received special instructions to depict this momentous episode in the life of the great merchant. It has been conjectured that the feast may have commemorated that given to Edward III when he and his court visited the town in the year 1344.

When we come to fish, there was great variety including whale, seal and porpoise, for our ancestors were not exact zoologists. We read even of a fish banquet given by Henry V, the hero of Agincourt, in honour of his wedding to Katherine Valois, in which forty kinds of fish were served, including sturgeon, roach, perch, gudgeon, chub (about as appetising, Salzman remarks, as an old pair of boots and probably less sustaining), salmon, trout, tench and, of course, the succulent lamprey. Every schoolboy knows that Henry I died of a surfeit of lampreys but, nevertheless, that enigmatic "fish" continued to figure in royal banquets and even within these last few months, the City of Gloucester presented a lamprey pie (lampreys were usually made into pies), to our present Queen.

Sturgeon, whale and, I think, porpoise were royal fishes and the Crown still exercises a shadowy jurisdiction over sturgeon captured in our rivers and whales thrown up on our beaches. Whale and porpoise flesh was, of course, salted and presents an unattractive picture, likewise seal which was also an article of diet.

In connection with the consumption of fish in the Middle Ages, we must not forget the incidences of Lent and Fast Days. The Church permitted the eating of certain amphibious animals during these abstinences, such as seal and otter, although I can scarcely imagine that

even our forebears were hardy enough to tackle the latter animal. There is a reminiscence of this in the *Compleat Angler*:—

PISCATOR: I pray you, honest huntsman, let me ask you a pleasant question. Do you hunt a beast or a fish?

HUNTSMAN: It is not in my power to resolve you. I leave it to be resolved by the college of Carthusians who have made vows never to eat flesh.

Strange to say, certain diving birds, including the coot, were also allowed although judging by the appearance of some dressed coots in Leadenhall Market during the years of war scarcity, the mere eating was sufficient penance. Great quantities of salted and dried fish were certainly eaten in the towns during the Middle Ages and the fishmongery business was divided into two quite distinct trades, the wet and the dried or stockfish merchants with their respective Companies or Mysteries.

Numerous ordinances concerning food were promulgated in early times with the light-hearted empiricism characteristic of those days but most of them, naturally, failed of their purpose. Edward I limited the price of best soles (no witches, I presume) to 3d. per dozen; the best turbot to 6d.; the best mackerel in Lent to one penny each; the best pickled herrings to twenty a penny; fresh oysters to 2d a gallon; a quarter of a hundred best eels to 2d. and so on. He also enacted that no one be permitted to water fish more than twice and no fish (unless salted) was to be kept in London beyond the second day. It would thus seem that somehow or other, plentiful supplies of fresh sea-fish were available at this early date, being brought to London, of course, by boat. Yarmouth herrings are especially mentioned and this town provided the king as a tenure, a hundred herrings of the first catch of the season. Eels were also much in request as they could be kept alive, though it is difficult to imagine how Henry III could have disposed of ten thousand eels, requisitioned for the Court at Christmas 1246.

The Fishmongers' Company existed at that time but the Stockfishmongers' Company was formed as a separate body in the reign of Richard II. Henceforth, there was great rivalry between the two Companies but they finally came together in Tudor times.

Strangely enough, venison does not figure so prominently in the royal feasts as might be supposed, in view of the fact that the tall deer was an almost sacrosanct figure of the chase. Doubtless, it ranked as an ordinary article of diet like mutton, beef or pork, and lent no special distinction to a feast. Presumably, after the "Captains and the Kings" had departed, the carcase was left to the huntsmen and ignominiously carted away to the kitchen to be made into pasties, thus, perhaps, creating a dangerous taste for venison amongst the poor. It was in later days that the present of a fat buck was the greatest compliment that one could pay to a friend. It was in later days, also, that turtle soup (unknown, alas! to our ancestors), haunch of venison and oysters, became luxuries at civic banquets. As for salmon, we have it on quite apocryphal authority that even the apprentices refused it. It was otherwise with the Wild Boar, no less than ninety of which

figure in the gargantuan list of stores ordered to be sent to the Court of Henry III for Christmas 1246. How it came about that the boar's head (*cum sinapio*) obtained the honour of presiding at every formal feast in the Middle Ages, I cannot say, but it long reigned supreme and its position has not been entirely ousted nowadays, although the head of a domestic porker must take its place.

Among the lesser sources of supply for the medieval household was the culver-house or dove-cot which was usually annexed to every manor house. A very considerable number of these buildings still remain and members of the L.N.H.S. will recall the enjoyable lectures given by Mr. Edward Yates, F.S.A., on this subject, of which he has made an especial study. These erections which were often very substantial and architecturally dignified, housed a columbarium of several hundred small compartments or nesting-holes and frequently included ingenious bits of mechanism for reaching the nests without trouble.

In quite early times, surprising quantities of wine were imported from the Continent especially from the Bordeaux district. This trade is said to have commenced about 1152 when Henry II married Eleanor of Aquitaine. There were four Vintner Mayors in the reign of Edward III and Gascony wine was then sold in London at fourpence the gallon. The fact that Aquitaine was then an English province facilitated the traffic. Vineyards undoubtedly existed in England then, as many local names indicate, especially in connection with monastic houses, but the yield was small and the quality of the vintage dubious and it certainly did not compete with the imported article. Moreover, it is said that the word "vineyard" often indicated merely an orchard. Mead and cider were also probably drunk at feasts and there is mention of "Ypocras", doubtless a sort of negus or spiced wine for festive occasions. In Tudor times, the trade in Spanish wines grew important and the great brewing industry arose in London.

Although the eating of flesh in one form or another, in the scarcity of attractive fruit and vegetables, was the standard diet apart from bread, there were also supplies of dairy products; milk, butter and cheese, for those who could afford them. The frequency of the surname "Day" or dairyman, testifies to this if other evidence were wanting. These supplies, however, were seasonal and restricted in area. Altogether, the culinary aspect of the Middle Ages is not alluring: nevertheless, there were great banquets on historic occasions, often marked with what seems to us a superfluity of dishes. The custom was to have three courses but the courses were not restricted as at present, to one class of food, various dishes being mingled together in one course. Presumably, there was an interval between these courses although there was no nicotine to solace the tedium of waiting. Possibly, these intervals were occupied in admiring the "soteltes" which were a feature of the spread. These subtleties were composed of sweetstuff and took various elaborate forms including buildings, figures, etc., though whether they were eventually eaten, I cannot say.

Regarding these subtleties, there is an interesting paragraph in Cavendish's "Life of Wolsey". The occasion was the famous reception

of the French Ambassadors at the Cardinal's Palace of Hampton Court in 1527. After describing the regal preparations made for their reception, Cavendish writes, "Anone came up the second course with so many dishes, subtleties and devices, above a hundred in number which were of so goodly proportion and so costly that I thinke the Frenchmen never saw the like. There were castles with images the same as in St. Paul's Church for the quantity, as well counterfeited as the painter should have painted it on a cloth or wall. There were beasts, birds and personages, most lively made and counterfeited, some fighting with swords, some with guns and cross-bows, some vaulting and leaping, some dauncing with ladies, some on horses in complete harness, jousting with long and sharp speares with many more devices. Among all, one I noted was a chesseboord, made of spiced plate, with men thereof, the same; and for the goodly proportion and because the Frenchmen be verie cunning and expert in that play, my lord Cardinal gave the same to a gentleman of France, commanding there should be made a goodlie case for the preservation thereof in all haste that he might convey the same safe into his country." Let us hope the "gentleman of France" got it home in good order!

From early times, our monarchs celebrated their Christmasses with revelry and feasting (for it is not exactly true that Dickens invented Christmas) and they showed a nostalgic preference for certain palaces where similar festivities had formerly taken place. Thus we read that in 1270, Henry III kept a "Royall Christmas" at Eltham and the custom continued at intervals until the reign of Henry VIII who, as Holinshed records, kept a solemn Christmas at his manor of Eltham in 1515. In 1482-3 it is also recorded that Edward IV kept his Christmas here in great state when more than two thousand persons were daily entertained. The Tudors, however, preferred Greenwich Palace where Henry VIII and Elizabeth I held many sumptuous entertainments which have been fully described by contemporary chroniclers.

It was at Greenwich Palace in 1527 that Henry entertained the French Ambassadors, eight in number, a few days after they had been feasted by Wolsey at Hampton Court. Wolsey's display had been magnificent enough but the King seems to have done even better and the old chroniclers, Stow included, appear to have been lost for words to describe the sumptuousness of the scene. Indeed, Stow remarks that he "lacked head of fine wit and also cunning in his bowels" to convey an adequate picture to his readers and that although the entertainment of My Lord Cardinal had been a marvellously sumptuous affair yet Henry's effort at Greenwich excelled it as much as gold excels silver.

In some instances, we possess exact inventories of the provisions supplied for these Christmas feasts, and the same partake more of the nature of preparations for a siege than rational house keeping, but the feastings and revels lasted for several days, possibly until all the viands were consumed. The influence of the feudal system was also not wholly extinct and a host of retainers and such like were boarded or perhaps boarded themselves where good cheer might be expected.

Amongst all the feasts of the past, the Coronation Banquets take high rank. They were held in Westminster Hall from the time of Richard II until that of George IV. It was at the Coronation Feast of Richard II in 1377 that we first hear of a Dymoke as the King's Hereditary Champion, in virtue of the tenure of the manor of Scrivelsby, near Horncastle in Lincolnshire, riding into the Hall in full armour to challenge anyone who disputed the right of succession of the monarch to the throne. This interlude is graphically described by Pepys, who was a spectator, though not a participant, at the Coronation Feast of Charles II on the 23rd April 1661. The scene naturally appealed to him although all he got out of it were four rabbits and a pullet. At the Coronation of George IV on the 19th June 1821 the Dymoke of the day again appeared, clad in full armour on a pie-bald steed and having the Duke of Wellington and the Marquis of Anglesey, both also mounted although in robes, not armour, on either side of him. The challenge was duly made and the gauntlet flung down but he did not have to engage in mortal combat. The ceremony had outlived its day and become merely theatrical. In fact, the Challenge and the Feast itself were thereafter abandoned, to the relief of succeeding sovereigns, who found the Coronation Service in the Abbey sufficiently exhausting.

The Guildhall Banquets seem to have started in 1502, when Sir John Shaw, mayor, built the Kitchen at his own expense, and since then they have continued to the present day with perhaps rather monotonous regularity. But there were civic feasts before then, and in 1356 Henry Picard being Mayor had the signal honour of entertaining Edward III, the Black Prince, John King of Austria, the King of Cyprus and David of Scotland at his hall in the City which he afterwards opened to all comers for cards and dice. Royalty sometimes graced the Guildhall banquets and it was in 1674 that Charles II dined with Sir Robert Vyner (Goldsmith) and seeking to escape quietly from the noisy and too familiar atmosphere, was pulled back by the emboldened mayor and pressed to take "t'other bottle." The King with his easy manner, seeing how the land lay, good humouredly consented, murmuring, it is said, the old line "he that is drunk is as great as a king." Such anecdotes, however, would prolong this article unduly and take us into modern times.

Nature Conservation in the London Area.

Report on the Activities of the Nature Conservancy.

By Miss O. E. BALME, M.Sc., Regional Officer for S.E. England, and
W. A. MACFADYEN, M.C., Ph.D., Sc.D., Geologist.

1. PROPOSED NATURE RESERVES.

There has been some progress in negotiations on the setting up of two nature reserves in the London Natural History Society's area.

PROPOSED NATIONAL NATURE RESERVE.

WORMLEY Wood, HERTS. M.R. 52/3206.

In May, 1953, the wood was visited by Dr. Conway, who put forward proposals for the extent and management of the proposed reserve and recommended that further administrative action should be deferred for a year. During this period a post-graduate student, under the auspices of the Conservancy, should carry out an ecological investigation into the soils and history of the woodland to provide a proper basis for a plan of management. This survey is now in progress.

PROPOSED LOCAL NATURE RESERVE.

RUISLIP RESERVOIR, MIDDLESEX. M.R. 51/0990.

Although the Ruislip-Northwood Urban District Council have approved the setting up of a local nature reserve in this area (1952) they have as yet been unable to raise the money to provide adequate fencing and the Conservancy are not willing to declare a local reserve unless efficient management is ensured. In the informative report submitted by Lt. Cmdr. C. P. Staples, R.N., in January, 1953, he emphasizes the necessity of a chain-link fence 5 ft. high with barbed wire overhang. As a first step towards enclosure, the Ruislip U.D.C. have ordered the re-siting of a length of chain-link fencing to border part of the proposed reserve. The completion of the enclosure is regarded as a matter of urgency.

The Ruislip and District Natural History Society have formed a reserve sub-committee on which the Conservancy is represented by Lt. Cmdr. Staples. They have arranged for the patrolling of the area during week-ends of the past summer. They are also investigating the problem of the water level in the marsh as conditions are deteriorating rapidly.

2 SITES OF SPECIAL SCIENTIFIC INTEREST.

In the London Natural History Society's area the Nature Conservancy have taken part in discussions on the following *Sites of Special Scientific Interest* notified to the Planning Authorities under the terms of Section 23 of the National Parks and Access to the Countryside Act, 1949.

It should be noted that the Conservancy have to rely on persuasion to try to preserve the scientific (natural history) interest in the face

of any developments that may be proposed. They have no powers over these sites, which remain the undoubted property of their owners, who, of course, retain their full rights over their land. Intending visitors should apply for prior permission from the owners for access to them.

It is gratifying that the Conservancy's persuasive powers are beginning to function in a promising manner, given the essential factors of public spirit and goodwill of the owners, and consideration by the planning authorities. The intentions of the Act in respect of Section 23 are thus taking effect.

MIDDLESEX.

HAREFIELD PIT. M.R. 51/050898.

In June 1951 a representative of the Nature Conservancy attended a meeting with the owners and the authorities concerned, to discuss rubbish tipping in this pit. After putting the case for the scientific interest (geological and botanical), such provisional agreement as proved possible was obtained towards preserving that interest.

A local inquiry was held in November 1953, and the Ministry of Housing and Local Government officer who held it was reminded of the Conservancy's interest and action taken under Section 23 of the Act.

STAINES MOOR. M.R. 51/0372.

We have been notified of two applications for industrial use of land in this Section 23 site and it has been considered impracticable to raise any objections. As the site lies close to the village and parts of it have already been scheduled for water-works development and the construction of Staines by-pass, it will probably prove impossible to attempt further preservation.

HERTFORDSHIRE.

WATFORD HEATH BRICKWORKS. M.R. 51/125942.

This classic site for the fossiliferous basement bed of the London Clay, the Reading Beds, and down to the top of the Chalk was inspected in March 1953 with a view to notifying it as a S.S.S.I.

Unfortunately the section is now completely obliterated and had to be written off. Rubbish had been tipped in quantity, and the whole was being bulldozed over in course of flattening, apparently for a building site.

ALDENHAM RESERVOIR. M.R. 51/1695.

On the Hertfordshire Development Plan, now being considered, two new roads are sited to the west and south of the reservoir, to be constructed within the first 20 years of the plan. As neither drainage of the reservoir nor building development are entailed, we feel that the scientific interest should not be impaired.

LEES WOOD AND JACOTT'S HILL. M.R. 51/0897.

The construction of a new road through the middle of this site is proposed in the Development Plan (not scheduled within the first 20 years of the plan). The County Council say that the siting of the road cannot easily be altered but we have asked that disturbance of the surrounding land should be avoided as far as possible.

KENT.

BARNFIELD PIT, SWANSCOMBE. M.R. 51/595744.

Negotiations have taken place with the owners, and it is hoped that an announcement of the outcome may soon be possible.

BAKER'S HOLE, NORTHFLEET. M.R. 51/615739.

Negotiations have taken place with regard to this site, whose boundaries have had to be revised. A fine section of the Coombe Rock is being preserved in spite of the development that is taking place in further chalk workings.

NORRIS'S PIT, CRAYFORD. M.R. 51/515768.

Difficulties have been disclosed with regard to the preservation of this section of the Crayford Brick Earth with the *Corbicula* bed, and an alternative site is being sought.

Norris's Pit, however, at the worst, is not likely to be obliterated by rubbish tipping for the next year or two.

JOYDEN'S WOOD. M.R. 51/5071.

There was one application for building on a part of this site which has been in the process of development for 20 years. As this did not involve an area of particular botanical interest, no objection was raised apart from a warning that we should be disturbed by any extension of the development area.

SURREY.

BROCKHAM TO REIGATE ESCARPMENT. M.R. 51/2051.

The Ministry of Housing and Local Government has notified us that a quarry within this site was scheduled for limestone working on the Surrey County Council Development Plan. We replied that we had no objection to quarrying in this limited area.

Notes on the Drone-flies (Syrphidae, Diptera) of Wimbledon Common.

By A. W. JONES.

THE following notes are upon two sub-families of the *Syrphidae* (Hover-flies):—

Volucellinae, comprising the sole genus *Volucella* whose grubs act as scavengers in nests of wasps and humble bees.

Eristalinae, comprising genera *Eristalis*, *Myiatropa*, *Helophilus*, *Mallota* and *Merodon*. The larvae of the first four are the familiar rat-tailed maggots living in decomposing matter in mud and those of *Merodon* in daffodil and other bulbs.

Many of the flies closely resemble bees and wasps and all give a characteristic drone when caught in the net.

The details of flower visits and species occurring are taken from casual notes made during 1947-53 and cannot be considered at all complete. Dates of the appearance of adult flies and of flowering periods of plants are as observed on Wimbledon Common.

The nomenclature followed is that of Verrall (1901) as regards drone-flies, and that of flowering plants from Clapham, Tutin and Warburg (1952), the popular names from Rayner (1927) unless enclosed in inverted commas.

SYSTEMATIC LIST.

VOLUCELLINAE.

Volucella inanis L. Late July to late August. Very scarce but seen every year. This species is reputed to breed in *Vespa crabro* L. (Hornet) nests which are frequent on the Common. Visited *Rubus fruticosus* agg., *Angelica sylvestris* L., *Heracleum sphondylium* L., *Mentha* sp., *Lycopus europaeus* L., *Cirsium arvense* (L.) Scop.

V. zonaria Poda. 14th and 29th August 1948, 22nd July 1951. 2 ♂ and 2 ♀. Visited *Rubus fruticosus* agg., *Cirsium arvense* (L.) Scop.

V. pellucens L. Early June to mid-September. A common species found largely at edges of woods and in clearings and paths in woods. Usually hovering at height of 8 feet but also basking in sun or visiting flowers fairly frequently. Visited *Rubus "fruticosus"* agg., *Rosa arvensis* Huds., *Aegopodium podagraria* L., *Mentha* sp., *Lycopus europaeus* L., *Succisa pratensis* Moench, *Cirsium palustre* (L.) Scop. Another very common species of the London Area is *V. bombylans* L. which has not yet been recorded for the Common.

ERISTALINAE.

Eristalis sepulchralis Fab. 21st May 1949, 23rd July 1949, 9th June 1951. A rare species not recorded as visiting flowers but may have visited *Ranunculus repens* L.

E. tenax L. Early March to mid-November. An abundant species. Occasionally found hovering and sometimes by water. On 9th September 1950 a ♂ on *Succisa pratensis* Moench carried off by *Vespa crabro* L. (Hornet). Visited *Diplotaxis tenuifolia* (L.) D.C., *Rubus fruticosus* agg., *Hedera helix* L., *Aegopodium podagraria* L., *Angelica sylvestris* L., *Pastinaca sativa* L., *Heracleum sphondylium* L., *Ligustrum ovalifolium* Hassk., *Convolvulus arvensis* L., *Lycopus europaeus* L., *Succisa pratensis* Moench, *Senecio*

jacobaea L., *Tussilago farfara* L., *Solidago* cf. *canadensis* L., *Aster* spp., *Achillea millefolium* L., *Matricaria maritima* L., *Cirsium vulgare* (Savi) Ten., *C. arvense* (L.) Scop., *Hypochaeris radicata* L., *Leontodon autumnalis* L., *Crepis taraxacifolia* Thuill., *Taraxacum* sp.

E. intricarius L. Mid April to early September. Rather scarce. The females are rarely seen and then visiting flowers; the males usually hovering 3-15 feet high—magnificent hoverers—occasionally sweeping off over neighbouring trees and returning. Visited *Rubus fruticosus* agg., *Pastinaca sativa* L., *Mentha* sp., *Succisa pratensis* Moench, *Senecio jacobaea* L., *Cirsium arvense* (L.) Scop.

E. arbustorum L. Early March to late September. An abundant species. more frequent in open spaces than *E. tenax* L., and *E. pertinax* Scop. Visited *Ranunculus repens* L., *R. ficaria* L., *Diplotaxis tenuifolia* (L.) D.C., *Barbarea vulgaris* R. Br., *Alliaria petiolata* (Bieb.) Cav. & Grande, *Potentilla erecta* (L.) Raüsch, *Crataegus monogyna* Jacq., *Anthriscus sylvestris* (L.) Bernh., *Aegopodium podagraria* L., *Angelica sylvestris* L., *Pastinaca sativa* L., *Heracleum sphondylium* L., *Salix* sp. *Mentha* sp., *M. ? longifolia* (L.) Huds., *Lycopus europaeus* L., *Succisa pratensis* Moench, *Senecio jacobaea* L., *S. squalidus* L., *Tussilago farfara* L., *Solidago* cf. *canadensis* L., *Aster* spp., *Achillea millefolium* L., *A. ptarmica* L., *Cirsium arvense* (L.) Scop., *Taraxacum* sp.

E. pertinax Scop. Early April to early October. An abundant species in similar habitats to *E. tenax* L., but is found hovering more often, especially near *Crataegus monogyna* Jacq. before the flower buds open. Visited *Diplotaxis tenuifolia* (L.) D.C., *Rubus fruticosus* agg., *Hedera helix* L., *Angelica sylvestris* L., *Pastinaca sativa* L., *Heracleum sphondylium* L., *Mentha* sp., *Lycopus europaeus* L., *Succisa pratensis* Moench, *Senecio jacobaea* L., *Tussilago farfara* L., *Aster* spp., *Achillea millefolium* L., *Matricaria maritima* L., *Cirsium arvense* (L.) Scop., *Carduus crispus* L., *Taraxacum* sp.

E. nemorum L. 30th July 1949, 2nd, 9th and 10th August 1952. Visited *Senecio jacobaea* L., *Cirsium palustre* (L.) Scop.

E. horticola De Geer. 12th August 1950, 2nd and 9th September 1950, 2nd August 1952. Rare or overlooked, frequent in late summer 1950 in two damp clearings in woods. Visited *Pastinaca sativa* L., *Mentha* sp., *Lycopus europaeus* L., *Succisa pratensis* Moench.

Myiophila florea L. Early May to late August. A fairly frequent species, most often found hovering in woodland paths usually buzzing loudly, recorded as being attracted to white surfaces such as a notebook. A number bred from holes in trunks of *Ulmus procera* Salisb. (Common Elm), one large one known to have been providing a breeding ground for several years; also bred from similar habitat in *Betula* sp. (Birch). Visited *Hypericum perforatum* L., *Rubus fruticosus* agg., *Cornus sanguinea* L., *Aethusa cynapium* L., *Angelica sylvestris* L., *Pastinaca sativa* L., *Heracleum sphondylium* L., *Mentha* sp., *Succisa pratensis* Moench, *Achillea ptarmica* L., *Hypochaeris radicata* L.

Helophilus trivittatus Fab. Early July to early September. Rare. Visited *Ranunculus flammula* L., *Diplotaxis tenuifolia* (L.) D.C., *Succisa pratensis* Moench, *Cirsium arvense* (L.) Scop., *Leontodon autumnalis* L.

H. hybridus Loew. 1st and 15th August 1948, 2nd and 9th September 1950. Visited *Succisa pratensis* Moench, *Senecio jacobaea* L., *Cirsium arvense* (L.) Scop.

H. pendulus L. Early April to late September. A fairly frequent species, most often seen about damp clearings. Visited *Salix* sp., *Succisa pratensis* Moench, *Aster* sp., *Achillea ptarmica* L., *Cirsium arvense* (L.) Scop., *Taraxacum* sp.

Mallota cimbiciformis Fall. Bred only, from larvae taken 25th March 1951 from hole in *Betula* sp. (Birch) trunk, emerging at the end of May. Pupae in same hole 11th March 1952.

Merodon equestris Fab. Early May to late June. Locally frequent some years in grassy places. The three vars. *equestris*, *narcissi* and *validus* have been observed. Visited *Ranunculus repens* L., *Hypochaeris radicata* L. (including pair in cop.), *Crepis taraxacifolia* Thuill.

FLOWER VISITS.

RANUNCULACEAE.

Ranunculus repens L. Creeping Buttercup. Yellow. April to August. ? *Eristalis sepulchralis* Fab., *E. arbustorum* L., *Merodon equestris* Fab.
R. flammula L. Lesser Spearwort. Yellow. June to October. *Helophilus trivittatus* Fab.
R. ficaria L. Lesser Celandine. Yellow. March to May. *Eristalis arbustorum* L.

CRUCIFERAE.

Diplotaxis tenuifolia (L.) D.C. Wall Rocket. Yellow. June to September.
Eristalis tenax L., *E. arbustorum* L., *E. pertinax* Scop., *Helophilus trivittatus* Fab.
Barbarea vulgaris R. Br. Winter Cress. Yellow. April to August. *Eristalis arbustorum* L.
Alliaria petiolata (Bieb.) Cav. & Grande. Garlic Mustard. White. April to October. *Eristalis arbustorum* L.

HYPERICACEAE.

Hypericum perforatum L. Perforate St. John's Wort. Yellow. June to September. *Myiatropa florea* L.

ROSACEAE.

Rubus fruticosus agg. Bramble. White (or pink). May to September. *Volucella inanis* L., *V. zonaria* Poda, *V. pellucens* L., *Eristalis tenax* L., *E. intricarius* L., *E. pertinax* Scop., *Myiatropa florea* L.
Potentilla erecta (L.) Raüsch. Upright Tormentil. Yellow. April to October. *Eristalis arbustorum* L.
Rosa arvensis Huds. Field Rose. White. June. *Volucella pellucens* L.
Crataegus monogyna Jacq. Hawthorn. White. April to June. *Eristalis arbustorum* L.

CORNACEAE.

Cornus sanguinea L. Dogwood. White. May to July. *Myiatropa florea* L.

ARALIACEAE.

Hedera helix L. Ivy. Green. September to November. *Eristalis tenax* L., *E. pertinax* Scop.

UMBELLIFERAE.

Anthriscus sylvestris (L.) Bernh. Wild Chervil. White. April to August. *Eristalis arbustorum* L.
Aegopodium podagraria L. Goutweed. White. May to July. *Volucella pellucens* L., *Eristalis tenax* L., *E. arbustorum* L.
Aethusa cynapium L. Fool's Parsley. White. June to October. *Myiatropa florea* L.
Angelica sylvestris L. Wild Angelica. White. July to September. *Volucella inanis* L., *Eristalis tenax* L., *E. arbustorum* L., *E. pertinax* Scop., *Myiatropa florea* L.
Pastinaca sativa L. Wild Parsnip. Yellow. June to August. *Eristalis tenax* L., *E. intricarius* L., *E. arbustorum* L., *E. pertinax* Scop., *E. horticola* De Geer, *Myiatropa florea* L.
Heracleum sphondylium L. Hogweed. White. May to November. *Volucella inanis* L., *Eristalis tenax* L., *E. arbustorum* L., *E. pertinax* Scop., *Myiatropa florea* L.

SALICACEAE.

Salix sp. "Sallow". Yellow and White. March to April. *Eristalis arbustorum* L., *Helophilus pendulus* L.

OLEACEAE.

Ligustrum ovalifolium Hassk. "Garden Privet". White. July. *Eristalis tenax* L.

CONVOLVULACEAE.

Convolvulus arvensis L. Field Bindweed. White. June to September. *Eristalis tenax* L.

LABIATAE.

Mentha sp. "Water Mint". Purple. August. *Volucella inanis* L., *V. pellucens* L., *Eristalis intricarius* L., *E. arbustorum* L., *E. pertinax* Scop., *E. horticola* De Geer, *Myiatropa florea* L.

M. ? longifolia (L.) Huds. Horse Mint. Purple. July to August. *Eristalis arbustorum* L.

Lycopus europaeus L. Gipsywort. White. July to September. *Volucella inanis* L., *V. pellucens* L., *Eristalis tenax* L., *E. arbustorum* L., *E. pertinax* Scop., *E. horticola* De Geer.

DIPSACACEAE.

Succisa pratensis Moench. Devil's-bit Scabious. Purple. August to November. *Volucella pellucens* L., *Eristalis tenax* L., *E. intricarius* L., *E. arbustorum* L., *E. pertinax* Scop., *E. horticola* De Geer, *Myiatropa florea* L., *Helophilus trivittatus* Fab., *H. hybridus* Loew, *H. pendulus* L.

COMPOSITAE.

Senecio jacobaea L. Common Ragwort. Yellow. July to November. *Eristalis tenax* L., *E. intricarius* L., *E. arbustorum* L., *E. pertinax* Scop., *E. nemorum* L., *Helophilus hybridus* Loew.

S. squalidus L. Oxford Ragwort. Yellow. April to January. *Eristalis arbustorum* L.

Tussilago farfara L. Coltsfoot. Yellow. February to April. *Eristalis tenax* L., *E. arbustorum* L., *E. pertinax* Scop.

Solidago cf. canadensis L. "Garden Golden Rod". Yellow. July to September. *Eristalis tenax* L., *E. arbustorum* L.

Aster spp. "Michaelmas Daisies". Yellow and Purple. August to November. *Eristalis tenax* L., *E. arbustorum* L., *E. pertinax* Scop., *Helophilus pendulus* L.

Achillea millefolium L. Milfoil. White. June to November. *Eristalis tenax* L., *E. arbustorum* L., *E. pertinax* Scop.

A. ptarmica L. Sneezewort. White. July to September. *Eristalis arbustorum* L., *Myiatropa florea* L., *Helophilus pendulus* L.

Matricaria maritima L. Scentless Mayweed. Yellow and White. May to October. *Eristalis tenax* L., *E. pertinax* Scop.

Cirsium vulgare (Savi) Ten. Spear Thistle. Purple. June to August. *Eristalis tenax* L.

C. palustre (L.) Scop. Marsh Thistle. Purple. June to September. *Volucella pellucens* L., *Eristalis nemorum* L.

C. arvense (L.) Scop. Creeping Thistle. Purple. June to October. *Volucella inanis* L., *V. zonaria* Poda, *Eristalis tenax* L., *E. intricarius* L., *E. arbustorum* L., *E. pertinax* Scop., *Helophilus trivittatus* Fab., *H. hybridus* Loew, *H. pendulus* L.

Carduus crispus L. Welted Thistle. Purple. June to October. *Eristalis pertinax* Scop.

Hypochaeris radicata L. Long-rooted Catsear. Yellow. May to October. *Eristalis tenax* L., *Myiatropa florea* L., *Merodon equestris* Fab.

Leontodon autumnalis L. Autumnal Hawkbit. Yellow. July to September. *Eristalis tenax* L., *Helophilus trivittatus* Fab.

Crepis taraxacifolia Thuill. Beaked Hawksbeard. Yellow. June to July. *Eristalis tenax* L., *Merodon equestris* Fab.

Taraxacum sp. Dandelion. Yellow. January to December. *Eristalis tenax* L., *E. arbustorum* L., *E. pertinax* Scop., *Helophilus pendulus* L.

The chief associations on Wimbledon Common may be summarised : March and April.

Salix spp. ("Sallow") attract a fair number but notes are not often made because of the difficulties in identification of *Salices* at this time of year. *Tussilago farfara* L. when in large patches is a great attraction.

May and Early June.

Anthriscus sylvestris (L.) Bernh. is abundant along Beverley Brook and occasional elsewhere, and draws great numbers.

Late June and July.

Rubus fruticosus agg. and *Heracleum sphondylium* L. attract a fair proportion.

August and September.

Angelica sylvestris L. in wet woods and *Cirsium arvense* (L.) Scop. in open places in early August give way to *Lycopus europaeus* L. and *Mentha* sp. in boggy ground which itself may be an attraction and finally to *Succisa pratensis* Moench in its limited localities.

October.

A few last visits to *Hedera helix* L.

Drone-flies are most often seen when visiting flowers but from the limited records available it is not possible to draw any definite conclusions as to the reasons for the choice of certain flowers—a detailed census of flowers, flies and flower visits is required for this—but some of the factors may be :—

1. COLOUR. From the list of chief associations it will be seen that the predominant colour varies from month to month as regards drone-flies in general, although individual species may vary in their preference of flowers: *Eristalis arbustorum* L. is for example the most abundant on *Anthriscus sylvestris* (L.) Bernh. Parmenter (1950) also suggested that colour plays little if any part in restricting the choice of flowers visited. It must be remembered that flowers appearing the same colour to us may appear different to insects. Ilse (1948) has shown that *Apis mellifera* L., the honey-bee, is able to see ultra-violet light invisible to us, and the training of *Eristalis tenax* L. to various shades of yellow is described in Ilse (1949).

2. ADULT APPEARANCES. The most abundant drone-flies are *Eristalis tenax* L., *E. pertinax* Scop., and *E. arbustorum* L. whose appearances as adults cover very long periods and these have the opportunity to, and do, sample a wide range. *Volucella pellucens* L. appears only in a few months and visits are not nearly so varied.

3 BREEDING PLACES. These may play an important part in the congregation of some *Eristalinae* at flowers as most of the chief attractions are in or near wet places or woods. It should be noted, however, that they are very often found on the heaths where suitable flowers are found and it may be the sparsity of these on the heaths, rather than of breeding places, that causes drone-flies to be most frequent near woods and along woodland paths and in clearings.

4. ALIGHTING. From the list of flowers visited it can be seen that there is a factor which is largely common to all—they have by reason of their large size or cluster a large landing area. Although drone-flies are magnificent hoverers and flyers, their landing is inclined to be clumsy. Plants which have flowers in a spiked form or not presenting the flower upright are seldom visited. This may account for the lack of visits to *Calluna vulgaris* (L.) Hull (Ling) and *Ulex europaeus* L. (Gorse) which are abundant on the extensive heaths on the Common, and *Lamium album* L. (White Deadnettle) all along Beverley Brook, a situation in which drone-flies are abundant. The list in Parmenter (1950) shows similar flowers being visited by drone-flies. The plants providing the best landing stage are primarily the Umbelliferae, the Compositae rating second. The clustering of the blooms also makes the flowers more conspicuous and a visit more profitable.

5. HEIGHT. There do not appear to be any height preferences, records being made from 6 inches on *Tussilago farfara* L. to 10 feet on *Salix* sp.

6. FOOD TAKEN. No notes have been made as to whether pollen or nectar is taken, but this is certainly important.

7. SCENT. No notes have been made on this subject.

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City Bombed Sites Survey.

The Flies of the Cripplegate Bombed Site, City of London.

By L. PARMENTER, F.R.E.S.

HISTORICAL.

OVER the centuries much has happened around the spot where stands St. Giles Church to-day. The Romans lived nearby and sheep, cattle, horses, etc., must have been driven over the area which in those days was partly marshland. The Danes raided, sacked and burnt houses of the neighbourhood and in later years pigs ran wild scavenging in the City's streets. Horse traffic and animals going to and from market trampled and churned the mud of the unpaved streets.

In Tudor times ravens and kites were feeding on the refuse thrown from the thatched houses of the City. Before Linnaeus first differentiated and named flies in 1758, they must have swarmed in the summer on the filth of the City. Others must have bred in the mud by the open streams of Wallbrook and Fleet and in the varied trees and herbage growing in the fields and marshes about the City walls. But we have no records.

Although the area became built over prior to the 1939-45 war, there were still a few churchyards in the area. Horse traffic still passed along its streets, and vegetables, flowers and hay were carried through to market, bringing many insects. Thus before the bombing, a residue of species must have been able to maintain an existence in the Cripplegate area with their numbers increased from time to time by these waggon riders.

I walked through the City of London a day or two after the burning of this huge area but I cannot recall the sight of any flies, although I must admit I did not look for them particularly. Some may have remained but the devastation suggested a great clearance.

POST-BOMBING.

The spread of the plants, so varied in species, and their decay as summer gave way to autumn and then to winter, increased the variety of habitats for the surviving flies and for invaders from the surrounding areas. Flies are very active when days are warm, very mobile and given to wandering. Many may even have been wind-blown to the area and others followed in the wake of, or on, horse-drawn waggons themselves.

In September 1946 Mr. J. E. Lousley introduced me to some of the interesting plants of the bombed sites, and the variety of flies present was very noticeable. Since then visits have been made between April and October at odd times, sometimes only once in a year, for other haunts called for attention. However, there can be little doubt that the area is still worth visiting as several diptera, previously unknown in this country, have been collected in the Cripplegate area of recent years.

In 1947 one could range anywhere over the area, and water was present in static water tanks. Now only one tank remains, areas have been dug over and trenches made by archaeologists. Other areas have been levelled and turned into car parks. The City workers have invaded the area to eat their sandwiches and to rest in the sun. One or two basements have been converted into rough football pitches. Sallow catkins and some of the flowers have been torn off for office decoration. Brick walls have been built around the basement areas and several roads blocked for traffic. One corner has been turned into a garden which spreads year by year.

MAJOR HABITATS.

In 1948, F. E. Wrighton, *Lond. Nat.*, No. 27 (1947), described the major habitats. The largest area consisted of the basement floors of concrete or asphalt with the slits between, and with shallow heaps of dust often with a moss covering. These cracks supported the chief plants of the area, particularly at the bases of walls. Rubble tips, some hard with few plants but some, the looser ones, had a varied flora with Bracken, *Pteridium aquilinum* (L.) Kuhn thriving on them. The vertical walls, besides holding many plants able to colonise the mortar, provided the surfaces warmed by the rising and setting sun that are so attractive to blow-flies and others. The gardens were important, probably holding an initial reservoir of species that quickly colonised the area and undoubtedly provided, in the new garden established in the S.W. corner, a variety of garden plants that have attracted several leaf-mining Agromyzidae and provided pollen and nectar for the Syrphidae and other flies visiting the flowers. The water present in 1947 may have been colonised by a few species of Chironomidae but no observations were made as the tanks were inaccessible. *Culex pipiens* L. was found at least up to 1950.

The mortar from the walls, the wind-carried dust, pollen, seeds and plant debris, the dung tipped by the City scavengers and deposits of remains of sandwiches and fruit of the office workers have aided the formation of soil from humus, the result of the decay of the plants of the area during the years since the bombing. There are now considerable stretches of grass turf.

In 1949, F. E. Wrighton, *Lond. Nat.*, No. 28 (1948), showed the importance of building materials in providing the chemicals needed by the plants in the soil as it was built up. He also commented on the effects of the atmospheric pollution. These effects are mostly indirect on the flies but, whilst the internal feeders on plants such as larvae of Agromyzidae, Chloropidae, Muscidae, etc., may escape the soot, aphides, the prey of Syrphidae, must have been reduced by the poison deposited so heavily over the area. Anyone who has walked through the bombed site herbage in summer after a dry period would agree that the soot covering was appreciable and an important factor.

Many of the flies of Cripplegate are dependent on certain plants for their food—as adults or as larvae. Others are dependent on various plants, e.g. trees (elder, poplar) and bracken for shelter, particularly

from the wind and in maintaining a more humid micro-climate. Some of the plants provide food for other insects on whom Syrphidae, Tachinidae and others prey or parasitize. The lists of plants and a discussion and illustrations of the vegetation are given by Wrighton in 1950-51, *Lond. Nat.*, Nos. 29, 30 (1949, 1950), and by R. S. R. Fitter in his *London's Natural History*.

HUMUS-BREEDERS.

The following genera have been recorded as bred from soil humus (I have bred some from the City myself), but in certain cases may have merely pupated in the soil after the larvae had fed on or in plants:—*Beris*, *Bibio*, *Chloromyia*, *Dilophus*, *Empis*, *Limonia*, *Lonchoptera*, *Microchrysa*, *Nephrotoma*, *Sapromyza*, *Sciara*, *Syritta*, *Tipula* and *Thereva*. Of these, the greenish *Limonia* (s.g. *Dicranomyia*) *chorea* Mg. is common, resting during most of the daylight on the ceilings of the open cellars where it dances up and down whilst retaining touch with the ceiling with its trembling legs. Towards dusk it leaves the cellars and wanders away from the bombed sites along the City streets and has been seen to alight in window boxes.

PLANT-BREEDERS.

Of the flies of the area whose larvae feed internally in grasses are *Agromyza*, *Ceradontha*, *Elachiptera*, *Lasiosina*, *Oscinella*, *Ophiomyia*, *Opomyza*, *Phytomyza* and *Thaumatomyia*.

The various Compositae provide the feeding grounds of several species of flies. The dominant plant of the area, Oxford Ragwort, *Senecio squalidus* L., is the principle host for large numbers of the Agromyzid leaf-miner *Phytomyza atricornis* Mg. and for many of the Trypetid leaf-miner, *Spilographa zoë* Mg.; both also attack the leaves of the Mugwort, *Artemisia vulgaris* L. The Mugwort is also attacked by the other leaf-miners, *Phytobia artemisiae* Kalt., *Phytomyza albiceps* Mg. and *Liriomyza artemisicola* de Meij.—the latter being more common than *P. albiceps*—and is galled by the Trypetid *Paroxyna misella* Lw. while *Oxyna parietina* L. lives in the stems. Whereas the Mugwort is attacked all over the area wherever it occurs, Oxford Ragwort suffers from the major attacks of *Phytomyza atricornis* where it grows in corners or close to walls where the plant is more sheltered from the wind. The parasite of *P. atricornis*, a Braconid, *Dacnusa* sp. is abundant.

The common Creeping Thistle, *Cirsium arvense* (L.) Scop. is mined in its leaves by *Phytomyza atricornis* Mg. and *Phytomyza affinis* Fln. and is galled in the stems by the Trypetid, *Urophora cardui* L. *Xyphosia miliaria* Schr. and *Trypetia ruficauda* Fab. breed in the flower heads. The larger Spear Thistle, *Cirsium vulgare* (Savi) Ten. is attacked in the flower heads by *Urophora stylata* Fab. and *Terrelia serratula* L. Other Trypetidae, *Sphenella marginata* Fln. and *Trypanea stellata* Fues. have been found at Cripplegate and, although known as breeding in the heads of Groundsel, *Senecio vulgaris* L., may have also attacked the more abundant Oxford Ragwort, *S. squalidus* L.

The Coltsfoot, *Tussilago farfara* L., has its leaves mined by the Trypetid, *Acidia cognata* Wied., and the flower heads of *Sonchus oleraceus* L. are the home of the larvae of *Ensina sonchi* L. Summer broods of *Phytomyza atricornis* Mg. also mine its leaves. Nipplewort, *Lapsana communis* L., was found in 1953 to be mined in its leaves by *Liriomyza strigata* Mg. *Napomyza lateralis* Fln. occurs and is known to breed in flower heads and stems of various Compositae. I have found it in both *Matricaria* and *Senecio*.

Other leaf miners have been found at Cripplegate, *Liriomyza amoena* Mg. in the leaves of Elder, *Sambucus nigra* L., *Liriomyza trifolii* Burg. and *Agromyza nana* Mg. in the leaves of Red Clover, *Trifolium pratense* L. and *Phytomyza populi* Ktlb. in the leaves of the Black Poplar, *Populus nigra* agg. The Bladder Senna, *Colutea arborescens* L. is a striking plant, well known to botanists using the railway line from Southend into London, and is used as an ornamental plant in Finsbury Circus, just a few hundred yards east of our bombed area, where it has its leaves mined by the Agromyzidae, *Liriomyza variegata* Mg. and *Liriomyza trifolii* Burg. Both species have attacked the few plants of *Colutea* on the bombed site. The well-known leaf miner of garden Pinks, *Phytobia flavifrons* Mg., appears to have invaded the City of recent years and now mines leaves of the Soapwort, *Saponaria officinalis* L. as well as the plants of *Dianthus* ? *plumarius* L. in the garden in the S.W. corner. In this same garden *Liriomyza strigata* Mg. has attacked Canterbury bells, *Campanula medium* L., Red Valerian, *Kentranthus ruber* L. and Hollyhock, *Althaea rosea* (L.) Cav.

Some of the Muscidae, such as *Delia trichodactyla* Rond. and *Pegomyia fugax* Mg., are known to breed on various vegetables. They may therefore have arrived from greengrocer shops and barrows of London and may even have bred on some of the Cruciferae present at Cripplegate.

FLOWER VISITORS.

The visitors to the flowers for nectar and to feed on the pollen are numerous. The following list is set forth under colours of the flowers. Yellow flowers appear to be the most attractive but they are the commonest flowers at Cripplegate owing to the widespread abundance of *Senecio* and *Taraxacum*. Compared with the flower visits of flies to the same species of plants in the open country, the Cripplegate list is poor. This is because of the smaller density of flies and also because of the rarity of certain species of plants. Again, the height of the flowering blooms may have some influence. The Hogweed flower-tables are not frequented as much as in the countryside where they are more noticeable to the flies, moving there at the greater height needed to rise over hedges and bushes.

Those marked with an asterisk * are additional to the long lists given in the three volumes of P. Knuth, *Handbook of Flower Pollination*, 1906-9 (English translation by J. R. A. Davis).

YELLOW FLOWERS.

Diplotaxis tenuifolia (L.) DC., Perennial Wall Rocket: *Bucentes geniculata* Deg.*, *Eristalis arbustorum* L.*, *E. tenax* L.*, *Madiza glabra* Fln.*, *Musca autumnalis* Deg.*, *Orthellia caesarion* Mg.*, *Swammerdamiella brevicornis* Mg.*, *Syritta pipiens* L.*, *Syrphus luniger* Mg.*, and *S. vitripennis* Mg.*

Salix sp., Sallow: *Calliphora erythrocephala* Mg.

Senecio squalidus L., Oxford Ragwort: *Bucentes geniculata* Deg.*, *B. maculata* Staeg.*, *Calliopum aeneum* Fln.*, *Calliphora erythrocephala* Mg.*, *C. vomitoria* L.*, *Egle radicum* L.*, *Eristalis arbustorum* L.*, *E. tenax* L.*, *Helophilus pendulus* L.*, *Lucilia illustris* Mg.*, *L. sericata* Mg.*, *Madiza glabra* Fln.*, *Orthellia caesarion* Mg.*, *Platychirus albimanus* F.*, *P. scutatus* Mg.*, *Protophormia terraenovae* R.D.*, *Scaeva pyrastri* L.*, *Scatophaga stercoraria* L.*, *Sphaerophoria scripta* L.*, *Syritta pipiens* L.*, *Syrphus corollae* F.*, *S. luniger* Mg.* and *S. ribesii* L.*

Sisymbrium officinale (L.) Scop., Hedge Mustard: *Platychirus albimanus* F.*

Sonchus oleraceus L., Common Sow-thistle: *Syrphus balteatus* Deg. and *S. corollae* F.*

Taraxacum officinale agg., Dandelion: *Calliphora erythrocephala* Mg., *Egle cinerella* Fln.*, *E. radicum* L.*, *Eristalis aeneus* Scop.*, *E. arbustorum* L., *E. tenax* L., *Platychirus albimanus* F.*, *P. clypeatus* Mg.*, *P. manicatus* Mg.*, *P. peltatus* Mg.*, *P. scutatus* Mg.*, *Scatophaga stercoraria* L., *Sphaerophoria scripta* L., *Syrphus luniger* Mg.* and *S. ribesii* L.*

Tussilago farfara L., Coltsfoot: *Calliphora erythrocephala* Mg., *Dasyphora cyanella* Mg.*, *Eristalis aeneus* Scop.*, *E. arbustorum* L.*, *E. tenax* L.*, *Gonia sicula* R.D.*, *Platychirus albimanus* F.*, *Scatophaga stercoraria* L. and *Syrphus luniger* Mg.*

WHITE FLOWERS.

Achillea millefolium L., Yarrow: *Eristalis arbustorum* L. and *E. tenax* L.

Calystegia sepium (L.) R.Br., Large Bindweed: *Platychirus peltatus* Mg.* and *Syrphus balteatus* Deg.

Heracleum sphondylium L., Hogweed: *Calliphora erythrocephala* Mg., *Chloromyia formosa* Scop.*, *Eristalis arbustorum* L., *E. tenax* L., *Lucilia sericata* Mg., *Syritta pipiens* L. and *Syrphus luniger* Mg.*

Ligustrum ovalifolium Hassk., Privet: *Eristalis arbustorum* L.* and *E. tenax* L.*

Prunus laurocerasus L., Cherry Laurel: *Calliphora erythrocephala* Mg.* and *Scatophaga stercoraria* L.*

Sambucus nigra L., Elder: *Syritta pipiens* L.

Saponaria officinalis L., Soapwort: *Eristalis tenax* L.* and *Syritta pipiens* L.*

Stellaria media (L.) Vill., Chickweed: *Calliphora erythrocephala* Mg.*,
Eristalis tenax L.*, *Orthellia caesarion* Mg.* and *Syrphus corollae* F.

RED FLOWERS.

Chamaenerion angustifolium (L.) Scop., Rosebay Willowherb: *Calliphora erythrocephala* Mg.* and *Lucilia illustris* Mg.*

Epilobium hirsutum L., Great Hairy Willowherb: *Syrphus luniger* Mg.*

Lychnis coronaria (L.) Desr., Rose Campion: *Sphaerophoria scripta* L.*

Papaver rhoeas L., Field Poppy: *Syrphus balteatus* Deg.*

LILAC OR PURPLE FLOWERS.

Aster ? novi-belgii L., Michaelmas Daisy: *Calliopum aeneum* Fln.*,
Egle radicum L.*, *Eristalis arbustorum* L.*, *E. tenax* L.* and
Lucilia illustris Mg.*

Cirsium arvense (L.) Scop., Creeping Thistle: *Eriothrix rufomaculatus* Deg.*, *Eristalis arbustorum* L., *E. tenax* L., *Syrphus luniger* Mg.*, *Thelaira leucozona* Pz.*, *Urophora stylata* F.*, *Varichaeta radicum* F.* and *Xyphosia miliaria* Schrk.*

Cirsium vulgare (Savi) Ten., Spear Thistle: *Scaeva pyrastri* L.* and *Terellia serratulae* L.*

Plants, as they die down, also provide homes for the larvae of many species. Tufts of dead *Cirsium vulgare*, judging by the numbers of fresh Sapromyzidae found on them in early summer, must surely form the home of the genera *Calliopum*, *Sapromyza*, *Minettia* and *Sapromyzosoma* although I have bred *Sapromyza sordida*, *S. obsoleta* and *Minettia rivosa* from earth on a wall ledge taken from below the elder tree near the Lord Mayor's Coach-house. Other rotting vegetation probably provides the habitat for breeding Drosophilidae although some may come from the neighbouring brewery. The Lonchaeidae have been bred from underneath bark and it may be that the species of this family at Cripplegate have survived in the trees of the churchyards.

PREDATORS.

More indirectly the vegetation influences the flies through the aphides that attack the roots, stems and leaves of the herbage. The devourers of these aphides include the Chloropid genus *Chloropisca* and the Chamaemyiid genus *Leucopsis* and the Syrphidae such as *Scaeva*, *Syrphus*, *Melanostoma*, *Paragus*, *Pipizella*, *Platychirus* and *Spaerophoria*. *Scaeva pyrastri* was bred in August 1947 from larvae feeding on aphides on *Salix* and a female *Syrphus corollae* was seen egg-laying amongst groups of aphides on a thistle, *Cirsium vulgare*. The aphid-laden twigs of *Salix* have attracted adults of *Calliphora*, *Protophromia* and *Syrphus* to feed on the sweet exudations.

Another group of species is formed by those that prey on other insects and the following predatory genera are present:—*Coenosia*, *Empis*, *Medetera*, *Platypalpus*, *Scatophaga* and *Tachydromia*. A *Scatophaga stercoraria* L. female captured a male *Madiza glabra* Fln. One

species, *Protophormia terra-novae*, attacks nestling birds, and a Cripplegate female laid 178 eggs in a tube after capture!

Besides birds, the flies have a few other enemies on the bombed site. The garden spider *Araneus diadematus* Clerck has captured *Calliphora erythrocephala* Mg. and *Lucilia illustris* Mg. and Mr. P. W. E. Currie found *Beris vallata* Forst. as the prey of the zebra spider *Salticus scenicus* Clerck and *Muscina stabulans* Fln. taken by the wasp *Metacrabro quadricinctus* F.

PARASITES.

The Tachinidae that have been found at Cripplegate are mostly parasites of the lepidoptera that have been recorded from there by Mr. D. F. Owen. However *Rhacodineura pallipes* is known as a parasite of earwigs, *Forficula* sp.. *Gonia sicula* has attacked the bees of the genera *Anthophora* and *Bombus* and the species of *Meigenia* are parasitic on sawflies. *Bessa selecta* Mg. is also a parasite of the sawfly, *Nematus curtispina* Thoms. that Mr. Currie has found at Cripplegate. It has also attacked the Grey Dagger moth, *Apatele psi* L. The worst Tachinid enemy of the lepidoptera of the bombed area is probably *Compsilura concinnata* Mg. for it has been known to attack almost every species that Owen has recorded from the area. Of the others, *Blepharidopsis nemea* Mg. is known from the Comma, *Polygonia c-album* L. and the Red Admiral, *Vanessa atalanta* L.; species of *Bucentes* from the Cabbage moth, *Mamestra brassicae* L., Dot moth, *Melanchra persicariae* L., Broom moth, *Ceramica pisi* L. and the Silver-Y, *Plusia gamma* L.; *Nemorilla floralis* Fln. from the Peacock, *Nymphalis io* L., White Ermine, *Spilosoma lubricipeda* L., Buff Ermine, *S. lutea* Hufn., Dot moth, *Melanchra persicariae* L., and Silver-Y, *Plusia gamma* L.; *Phebellia glauca* Mg. from the Garden Tiger, *Arctia caia* L.; *Phorocera assimilis* Fln. from the Cabbage moth, *Mamestra brassicae* L.; *Thelaira leucozona* Pz. from Elephant Hawk, *Deilephila elpenor* L., Poplar Hawk, *Laothoe populi* L., White Ermine, *Spilosoma lubricipeda* L., Buff Ermine, *S. lutea* Hufn., Ruby Tiger, *Phragmatobia fuliginosa* L., Garden Tiger, *Arctia caia* L. and Dot moth, *Melanchra persicariae* L.; *Varichaeta radicum* F. from Elephant Hawk, *D. elpenor* L., White Ermine, *Spilosoma lubricipeda* L., Buff Ermine, *S. lutea* Hufn., Dot moth, *Melanchra persicariae* L. and the Peacock, *Nymphalis io* L. whilst *Voria ruralis* Fln. is known from Red Admiral, *Vanessa atalanta* L., Cabbage moth, *Mamestra brassicae* L. and Silver-Y, *Plusia gamma* L.

It would seem that the Tachinidae followed their hosts quite quickly as they appeared at Cripplegate. It suggests that the London squares, gardens and possibly railway embankments, may hold quite a varied population of Tachinidae as well as their hosts. Certainly *Blepharidopsis nemea*, *Bucentes geniculata*, *Compsilura concinnata*, *Gonia sicula*, *Meigenia bisignata*, *M. mutabilis*, *Nemorilla floralis*, *Phebellia glauca*, *Phorocera assimilis*, *Thelaira leucozona* and *Voria ruralis* were present in the first year of my collecting at Cripplegate.

The presence of *Gonia sicula* after a period of easterly winds coincided with the observation of *Eristalis aeneus* in the area. Around London, both are mostly associated with east London salt marshes and may have come into the City area from the east aided by the wind.

OTHER GROUPS.

Species of *Eristalis* and *Helophilus* breed in mud and tree rot-holes but are most likely to have moved into the area from localities more suited to their larval stages. The London parks and larger gardens are known to have breeding sites. London streets, squares and gardens are visited by many species. Florists and greengrocers often have interesting visitors from the countryside resting on their windows in the sun. Most restaurants, hotels and snack bars maintain a population of flies attracted to food—fresh and spoilt—*Drosophila*, *Calliphora*, *Musca*, *Fannia*. It is interesting to record that on 15th October, 1949, I caught a specimen of *Polydaspis ruficornis* Mg. previously only known from flies bred from damaged walnuts. This is probably the only specimen taken on the wing in this country.

Horse dung, rotting meat, fish, vegetables and fruit of the London streets and markets maintain a varied population that in summer swarms on temporary deposits, attracted thereto by smell. Thus we can understand the arrival of numbers of *Calliphora*, *Hydrotaea*, *Lucilia* on fish found thrown away in the Cripplegate area, and of the same genera on rotting meat tossed on the bombed site. Odd deposits of animal dung have been seen to attract *Calliphora*, *Muscina*, *Polistes*, and may account for the continued presence of the genera *Dasyphora*, *Egle*, *Hydrotaea*, *Hylemyia*, *Microchrysa*, *Nemapoda*, *Orthellia*, *Phaonia*, *Scatophaga*, *Syritta* and *Tephrochlamys*.

One species, *Chyromya flava* L., is known to breed in bird dung and appears to be common in June in the Elder tree near the Lord Mayor's Coach-house. This tree is a well-known gathering place and probably a summer roost of House Sparrows. As the Sparrows may have been connected for centuries with the Lord Mayor's Coach, it is possible that this species of fly is a resident of London of very long standing.

DISCUSSION.

The climate of the area provides greater extremes than most of the London Area. The large bare areas are heated and cool more quickly than ground covered with herbage, especially woodland and hedgerow. The wind has little opposition but on the other hand there are many cracks and basement cellar ceilings where flies can creep and rest in shelter.

The higher temperatures in spring seem to encourage the early flowering and growth of many plants and to aid the earlier emergence of certain species of flies. For example, the earliest date I have found *Lonchae flavidipennis* was at Cripplegate on 24th April.

The rapidity of increase, given optimum breeding conditions, makes it obvious that once a species arrives and finds a niche suitable for its requirements, it can soon exert a considerable influence on the area. Some have decreased, for example *Tipula rufina* and *Tipula marmorata*,

possibly by reason of the destruction of certain walls with stone coping tops that provided shelter to the resting flies. Again, the arrival of Braconidae and their rapid increase brought a noticeable decrease in the leaf-miners, *Phytomyza atricornis* and *Spilographa zoe*.

The absence of cows and their dung has prevented an increase in the many dung-breeders that have arrived in the area. The restricted flora and the gradual change in the vegetation cover have brought changes in the composition and abundance of many phytophagous species. The gradual spread of grass turf is of special importance.

There does not seem to be a sufficient density to cause much competition. Predators are too few to vie with each other for prey. Parasitic diptera may or may not compete on the site but I have no data on the numbers of the Tachinid flies or of the lepidoptera larvae present to be able to deal with this problem. Intra-specific competition occurs between the pollen-eaters such as certain Syrphidae, Tachinidae and Muscidae but it cannot be important until the supply of pollen is limited and below demand. The only effect noticed so far is the dispersal of smaller insects by the arrival of a bustling *Varichaeta*, *Calliphora*, *Scatophaga* or *Eristalis* on the flower-head. Nearby flowers supply the needs of the displaced individuals who suffer merely delayed feeding and extra exertion.

Before passing to the list of species found in the area I wish to express my thanks to Lt.-Col. C. J. F. Bensley, Messrs. C. N. Colyer, P. W. E. Currie, J. D. Hillaby, A. W. Jones, A. E. Le Gros, D. F. Owen, F. E. Wrighton and the late L. G. Payne for odd specimens and comments and to Prof. E. M. Herring and Messrs. J. E. Collin, C. N. Colyer and E. C. M. d'A. Fonseca for assistance with the identification of certain Agromyzidae, Muscidae, Phoridae and Tachinidae.

My visits to the area have been erratic, starting in September 1946 and have since varied from one to seven visits between April and October in each year. Thus it will be seen that no comprehensive study has been made, merely a few collections aided by a number of breedings. However, the data gathered on just over 200 species demonstrates the interest to be found in a relatively small area in the centre of London.

In the list, the numbers represent the months in which adults were found. To have full details of numbers taken or seen on the various dates would have overburdened the paper and have created a false impression in view of the irregular visits.

Asterisks (*) indicate species not included in Kloet and Hincks List of British Insects of 1945.

SYSTEMATIC LIST.

ORTHORRHAPHA—NEMATOCERA.

TIPULIDAE. Crane flies.	<i>Culex pipiens</i> L. 4, 8-10
<i>Limonia (Dicranomyia) chorea</i> Mg. 4, 9	BIRIONIDAE.
<i>Nephrotoma flavescens</i> L. 6	<i>Bibio johannis</i> L. 4
<i>Tipula marmorata</i> Mg. 9	<i>Dilophus febrilis</i> L. 5, 8-9
<i>T. oleracea</i> L. 5-6	SCATOPSIDAE.
<i>T. paludosa</i> Mg. 9-10	<i>Swammerdamiella brevicornis</i> Mg. 9
<i>T. rufina</i> Mg. 4-5, 9	MYCETOPHILIDÆ. Fungus gnats.
CULICIDAE. Mosquitoes.	<i>Sciara carbonaria</i> Mg. 5

ORTHOVRHAPHA—BRACHYCERA.

STRATIOMYIDAE.

Beris vallata Forst. 7
Choloromyia formosa Scop. 6-8
Microchrysa polita L. 6-8

THEREVIDAE.

Thereva nobilitata F. 6-7

SCENOPINIDAE.

Scenopinus fenestralis L. 6

EMPIDIDAE.

Drapetis exilis Mg. 6-7
Empis aestiva Lw. 6
Platypalpus agilis Mg. 5
P. extricatus Coll. 6
P. flavigornis Mg. 6

P. longicornis Mg. 5, 7

P. minutus Mg. 5-9

P. pallidiventris Mg. 6-8

Tachydromia arrogans L. 5

DOLICHOPODIDAE.

Medeterus flavipes Mg. 6-7

LONCHOPTERIDAE.

Lonchoptera furcata Fln. 4, 6, 9

L. lutea Mg. 6-8, 10

PHORIDAE.

Diploneura nitidula Mg. 8

Megaselia brevicostalis Wood. 4

Phora aterrima F. 4-8, 10

Triphleba nudipalpis Beck. 4, 6

CYCLORHAPHA—ASCHIZA.

SYRPHIDAE. Hover-flies.

Chrysotoxum festivum L. 7
Eristalis aeneus Scop. 4
E. arbustorum L. 4-10
E. tenax L. 4, 6, 8-10
Helophilus pendulus L. 9
Melanostoma mellinum L. 7
M. scalare F. 7
Paragus tibialis Fln. 5
**Pipizella varipes* Mg. 7
Platychirus albimanus F. 4, 6-7, 9
P. angustatus Zett. 5
P. clypeatus Mg. 5
P. manicatus Mg. 5, 9

P. peltatus Mg. 5

P. scutatus Mg. 4-5, 7, 9

Scaeva pyrastri L. 7-9

Sphaerophoria rueppellii Wied. 5, 8

S. scripta L. 4, 6-10

Syrphus albostriatus Fln. 6

S. balteatus Deg. 6-9

S. corollae F. 6-7, 9

S. luniger Mg. 4, 6-10

S. ribesii L. 4, 6, 9

S. vitripennis Mg. 5, 9-10

Syritta pipiens L. 6-9

Xylota segnis L. 8

SCHIZOPHORA—ACALPYTERAE.

PALLOPTERIDAE.

Palloptera umbellatarum F. 5

PIOPHILIDAE.

Piophila nigricornis Mg. 4
P. nigrimana Mg. 5-6, 8, 10
P. varipes Mg. 5
P. vulgaris Fln. 4-6, 9

TRYPETIDAE.

Acidia cognata Wied. 8
Ensina sonchi L. 7
Oxyna parietina L. 5
Paroxyna misella Lw. 9-10
Sphenella marginata Fln. 8-9
Spilographa zoë Mg. 5, 7-10
Terellia serratulae L. 6-8
Trypanea stellata Fues. 8
Trypetta ruficauda F. 6-7
Urophora cardui L. 8
U. stylata F. 6-7
Xyphosia miliaria Schrk. 6-7

LONCHAEIDAE.

Lonchae flavidipennis Zett. 4-6, 9
L. vaginalis Fln. 5
 SAPROMYZIDAE [Lauxaniidae].
Calliopum aeneum Fln. 6-10
**Homoneura consobrina* Zett. 7
Minettia fasciata Fln. 5

M. lupulina F. 5

M. plumicornis Fln. 5-8

**M. rivosa* Mg. 6-8

Sapromyza apicalis Lw. 6-7

S. obsoleta Fln. 5

S. sordida Hal. 5-7

Sapromyzosoma quadripunctata L. 6-7

SEPSIDAE.

Nemapoda nitidula Fln. 5

Saltella scutellaris Fln. 6

Sepsis cynipsea L. 4, 6, 9-10

S. fulgens Mg. 6

S. nigripes Mg. 6

CHAMAEMYIIDAE.

Chamaemyia juncorum Fln. 5

Leucopsis griseola Fln. 4-6

HELOMYZIDAE.

Tephrochlamys rufiventris Mg. 4; 6

CHYROMYIDAE.

Chyromya flava L. 6-7

OPOMYZIDAE.

Geomyza tripunctata Fln. 4

Opomyza germinationis L. 6-7

SPHAEROCHERIDAE [CYPSELIDAE/
BORBORIDAE].

Collinellula palustris Coll. 9

Paracollinella curvinervis Stenh. 9

P. fontinalis Fln. 8
Trichiaspis equina Fln. 10
 ASTEIIDAE.
Asteia concinna Mg. 7
 DROSOPHILIDAE.
Drosophila fenestrarum Fln. 9
D. subobscura Coll. 6
Parascaptomyza disticha Duda. 6-10
Scaptomyza graminum Fln. 6, 9
 AGROMYZIDAE. Leaf-miners.
Agromyza mobilis Mg. 5
A. nana Mg. larvae and pupae in 8
A. nigripes Mg. 6
**A. nigrociliata* Hend. 5
**Cerodontha biseta* Hend. 5
C. denticornis Pz. 8
**Liriomyza amoena* Mg. 5
**L. artemisicola* de Meij. 5
L. flaveola Fln. 5
L. orbona Mg. 5
**L. pedestris* Hend. 4
**L. soror* Hend. 5
**L. strigata* Mg. 7-8
**L. trifolii* Burg. larvae and pupae in 8
**L. variegata* Mg. larvae and pupae in 6
Melanagromyza aeneiventris Fln. 5
M. lappae Lw. 5
M. pulicaria Mg. 5

Napomyza lateralis Fln. 4
Ophiomyia maura Mg. 6
Phytagromyza populi Kalt. larva in 7
Phytobia artemisiae Kalt. 5
P. flavifrons Mg. 7-8
**P. muscina* Mg. 4
Phytoliriomyza perpusilla Mg. 8
Phytomyza affinis Fln. 7
P. albiceps Mg. larvae in 7
P. atricornis Mg. 4, 6-8
P. nigra Mg. 5
P. ranunculi Schrk. 6-8
**P. robustella* Hend. 5

MILichiidae.
Madiza glabra Fln. 4, 9

CHLOROPIDAE.
Chloropisca glabra Mg. 5-9
Chlorops cereris Fln. 7
Elachiptera tuberculifera Corti. 8
Lasiosina cinctipes Mg. 9
Meromyza pratorum Mg. 7
Oscinella albisetosa Mg. 5
O. frit L. 4-6, 8, 9
**O. nigeriima* Mg. 4
O. nitidissima Mg. 5
**Polydaspis ruficornis* Mg. 10
Thaumatomyia notata Mg. 4-9
T. trifasciata Zett. 6

SCHIZOPHORA—CALYPTERAE.

CORDILURIDAE. Dung flies.
Scatophaga lutaria F. 5
S. stercoraria L. 4-10
 TACHINIDAE.
Bessa selecta Mg. 8
Blepharidopsis nemea Mg. 4-5
Bucentes cristata F. 6, 8
B. geniculata Deg. 4-10
B. maculata Staeg. 5, 8
Compsilura concinnata Mg. 6, 9
Eriothrix rufomaculatus Deg. 8
Exorista simulans Mg. 8
Gonia sicula R.D. 4
Lydella grisescens R.D. 8-9
L. stabulans Mg. 8
Meigenia bisignata Mg. 8-9
M. mutabilis Fln. 8-9
Nemorilla floralis Fln. 4-5
Phebellia glauca Mg. 6
Phorocera assimilis Fln. 5
Rhacodineura pallipes Fln. 9
Thelaira leucozona Pz. 6-7
Varichaeta radicum Fab. 8
Voria ruralis Fln. 9

CALLIPHORIDAE.
Calliphora erythrocephala Mg. 4-10
C. vomitoria L. 6, 9
Lucilia caesar L. 9
L. illustris Mg. 4-9
I. sericata Mg. 6-10
Macronchis polydon Mg. 8

Phyto melanocephala Mg. 6, 8
Pollenia rudis F. 4
Protachaeta discrepans Pand. 6, 8-9
Protophormia terraenovae R.D. 4-6, 9
Sarcophaga haemorrhoidalis Mg. 4-5, 7-10
S. melanura Mg. 7

MUSCIDAE.
Anthomyia pluvialis L. 4, 8
A. procellaris Rond. 5-6
Coenosia tricolor Zett. 4-5, 9
Dasyphora cyanella Mg. 4
Delia cepetorum Mde. 8
D. ciliarura Rond. 8
D. longula Fln. 7
D. trichodactyla Rond. 8
Dendrophaonia querceti Bouche 9
Egle cinerella Fln. 8
E. radicum L. 4-5, 7-9
Fannia canicularis L. 6, 9
F. manicata Mg. 4, 9
F. scalaris F. 7
Helina duplicata Mg. 4-5, 9
H. lucorum Fln. 4, 7, 9
H. marmorata Zett. 6
H. setiventris Ring. 7
Hydrophoria linogrisea Mg. 5, 7
Hydrotaea dentipes F. 4-6, 9
H. occulta Mg. 4-5
H. similis Mde. 9
H. tuberculata Rond. 9

<i>Hylemya variata</i> Fln. 9	<i>Pegohylemyia fugax</i> Mg. 6
<i>Limnophora compuncta</i> Wied. 8	<i>P. seneciella</i> Mde. 7
<i>L. vana</i> Zett. 6	<i>Phaonia fuscata</i> Fln. 4, 6
<i>Musca autumnalis</i> Deg. 8	<i>P. perdita</i> Mg. 8
<i>M. domestica</i> L. 9-10	<i>P. signata</i> Mg. 4
<i>Muscina stabulans</i> Fln. 4-5, 7-10	<i>Polietes lardaria</i> F. 9
<i>Ophyra leucostoma</i> Wied. 5-6, 8-10	<i>Schoenomyza litorella</i> Fln. 4-5, 9
<i>Orthellia caesarion</i> Mg. 4, 9-10	

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The Moths of London and its Surroundings.

By C. G. M. DE WORMS, M.A., Ph.D., F.R.I.C., F.L.S., F.R.E.S.

THE present paper is a fitting and logical sequel to "The Butterflies of London and its Surroundings" which appeared in 1950 in the *London Naturalist*, No. 29. Once more the Area under review is that embraced by a circle with a radius of 20 miles and its centre at St Paul's Cathedral. This gives an overall area of some 1,260 square miles.

The species of the moths to be dealt with in this present work comprise what are arbitrarily known as the Macrolepidoptera. In this I am following those Families which are treated by Dr. A. Seitz in his monumental work "The Macrolepidoptera of the World". The Families occurring in Britain include the Hawkmoths (*Sphinges*), then follows the large group of Families of the Spinner Moths under the heading of *Bombyces*, next the Night-flying moths (*Noctuidae*) and finally the Loopers (*Geometridae*) together with several subsidiary Families including the Burnets (*Zygaenidae*), the Clearwings (*Sesiidae*), the Goat Moths (*Cossidae*), and the small number of the *Limacodidae*. It is to be hoped that the Psychids, Pyralids, Tortricids and Tineides which form the main groups of the Microlepidoptera, comprising some 1,400 species, will be undertaken at some later period.

In the Transactions of the City of London Entomological Society for 1898 and in subsequent parts up till 1902 Dr. F. J. Buckell and Mr. L. B. Prout produced a very complete list of the Lepidoptera noted during the previous 20 years in an Area within a radius of 10 miles from St. Paul's. No less than 517 species of moths were recorded among the Families to be described in this review which are represented by some 830 species for the whole of the British Isles at the present time. Though the Area under survey is four times that of the 1898 list, it is surprising that only a little over 10% of the original figure can be added even in the last fifty years. This fact gives some idea of what a remarkable population of moths is harboured by the Metropolis and its immediate surroundings.

In the earlier paper reference was made to the main geological features of the region which contains every suitable type of terrain for moths, viz. woodland, chalk downs, heaths, fresh marsh and salt marsh. Only sand dunes and rocky cliffs are absent. The great City is surrounded by ideal localities and probably the richest nearest its centre is Wimbledon Common which has, fortunately, never been molested and therefore still favours many very local species. The same may be said of Epping Forest, beloved of Doubleday a hundred years ago. It is doubtful if the many species he recorded from this famous haunt have appreciably decreased since his time. Hampstead Heath still remains a very rich source of Lepidoptera, while in the southern regions we have the fine stretches of heath and wood round Oxshott which can well be emulated by such famous collecting haunts of the last century as Joyden's Wood and Darent Wood in North Kent. Even the steady

advance of the built-up areas has, fortunately, hardly altered the fauna to be found in these favoured localities, though as far back as 1891 we find Mr. C. Fenn lamenting the disappearance of many choice species from them. This has latterly proved not to have been justified. The downlands of Surrey and Kent provide many interesting species associated with the Chalk, such as the Light Feathered Rustic (*Agrotis cinerea*) and the very local Feathered Ear (*Pachetra leucophaea*) at Mickleham, also the Maple and Plumed Prominents (*Lophopteryx cuculla* and *Ptilophora plumigera*) in the Eynsford area. The marshlands bordering the Thames near Erith still harbour many water-loving species, even the Ground Lackey (*Malacosoma castrensis*).

What of the interior of the Metropolis, designated as Inner London, an area eight miles from east to west and five miles from north to south with St. Paul's as its centre? This lends itself in many ways much more to moths than to butterflies. One can visualise how the parks, squares and gardens of Central London teem with a large range of species able to feed on an almost infinite variety of vegetation, especially that which has sprung up on the bombed sites. The work of Messrs. D. Owen, A. Wheeler and others has recently shown what effect this can have on the moth population. Fifty years ago few people would have expected to find larvae of the Elephant Hawk (*Deilephila elpenor*) and of the Cinnabar (*Callimorpha jacobaeae*) feeding in the middle of the City itself.

In going through the literature it is remarkable to observe how many species are to be found within five miles of the City. Towards the end of the last century many collectors gave detailed lists of their captures in their London gardens. In 1898 one collector recorded (*Ent. Rec.*, 10, 51) taking some 50 species of Macrolepidoptera in his garden at Paddington. These were nearly all obtained either at rest by day or at a lighted window. In those days the use of powerful lights as a source of attraction was not fully appreciated and seldom utilised. We have the diary of E. H. Taylor who used to sugar almost nightly during the season in the 1890's on Wimbledon Common with the most successful results. He apparently seldom made use of light, which during the present century has been resorted to more and more, culminating in recent years with the advent of the mercury vapour bulb which has quite revolutionised moth collecting and has proved so efficacious in giving us an inkling into the true moth population of a particular area or locality. This new type of attraction has been latterly used to very great advantage in several parts of the London Area, especially in the central region. Mr. H. D. Swain has recently published a very concise list of his captures at M./V. light near Putney (*Ent. Gazette*, 3, 109), while Mr. L. C. Bushby has been running a similar apparatus since 1950 at the Zoo, Regents Park, with the most interesting results. He has recorded just over 100 species of Macrolepidoptera, including many unexpected ones, thus giving an insight into the species inhabiting the Inner Metropolis.

Now to turn to an analysis of some of the many species to be found in the Area. Several can be said to be "true Londoners", such as the

Lime Hawk (*Mimas tiliae*), the Sycamore (*Apatele aceris*), the Brindled Beauty (*Lycia hirtaria*), the Leopard moth (*Zeuzera pyrina*) and the Small Red-belted Clearwing (*Aegeria myopaeformis*). There is probably no area where these species are more prevalent than in the heart of London. Again the White Satin Moth (*Leucema salicis*) can often be found in prodigious numbers at Dalston where the insects at rest on the poplars have been likened to a snowstorm. The Vapourer (*Orgyia antiqua*) has sometimes been quite a plague in the centre of London.

The Great City has had its fill of migrant species at intervals. Those fine members of the Sphingidae, the Death's Head Hawk moth (*Acherontia atropos*) and the Convolvulus Hawk (*Herse convolvuli*) have been frequent visitors to the Metropolis, as have been to a lesser degree all five rare migrant Hawks, including the splendid Oleander (*Daphnis nerii*) of which a record number have visited this country in 1953. A specimen found in Queen Victoria Street in April, 1900, is now in the possession of Mr. Archibald Russell, Lancaster Herald.* In the last century the Silver Striped Hawk (*Hippotion celerio*) used to visit the British Isles and London much more often than the Striped Hawk (*Celerio livornica*). Of later years this state of affairs has been reversed. Another well-known migrant the Crimson Speckled Footman (*Utetheisa pulchella*) has been taken several times in the Area, once even at the Zoo in 1921. This insect has become increasingly rare as a visitor in recent years. In March, 1952, a specimen of the Bordered Straw (*Heliothis peltigera*) was caught in Piccadilly, while in that great migrant year, 1947, a number of the Vestal (*Rhodometra sacraria*) were recorded from Central London. Even that grand moth, the Clifden Nonpareil (*Catocala fraxini*) has paid several visits to London, one being taken in Hyde Park in 1885.

Quite a few exceptional rarities have been recorded for the Area. These include the Pease Blossom (*Periphanes delphinii*) captured in Norfolk Crescent in 1870. In 1865 Mr. Sidney Webb took a specimen of the little geometer, the Bright Wave (*Sterrhia serpentata*) near Box Hill where another appeared in 1869. Coming to more recent times an example of the Rosy Underwing (*Catocala electa*) was caught near Hoddesdon by Mr. D. Molesworth on 15th September, 1927. The two original specimens of the Dusky Marbled Brown (*Gluphisia crenata*) were found on poplars in 1839 and 1841, both in Ongar Park Wood on the fringe of the Area.

A few other British species were originally discovered in the London region. The earliest record of the very rare Dusky Clearwing (*Sciaropteron tabaniformis*) was from the outskirts of London in the first half of the 19th century. The Toadflax Brocade (*Calophasia lunula*) which has recently become a breeding species in this country, was first taken at Woodside near Epping in June, 1817, as reported by Stephens. The Pale Lemon Sallow (*Mellinia ocellaris*) was first recorded in Britain by E. H. Taylor on Wimbledon Common on 27th September, 1893. It was later found plentifully near Twickenham. London Docks were for

*Now Clarenceux King of Arms.

many years the headquarters of the Waved Black (*Parascotia fuliginaria*) till it was turned up commonly in the Bagshot sand area early this century. That small migrant geometer, the Gem (*Nycterosia obstipata*) was originally taken at Peckham in 1803, while the minute species the Rusty Wave (*Sterrha herbariata*) was first reported in 1856 by Stainton from a shop in Bloomsbury Street. Most British records of this moth come from central London. The Cloaked Pug (*Eupithecia togata*) was first recorded for Britain from Black Park, Fulmer, by Samuel Stevens in 1845.

As to some of the more local species, the Lobster (*Stauropus fagi*) has occurred as near the Centre as Hampstead. There is a single record of the Alder Kitten (*Cerura bicuspis*) from a larva beaten near Limpsfield in 1938 by Mr. C. N. Hawkins. The Scarce Prominent (*Odontosia carmelita*) has appeared in several localities on the fringe of the Metropolis, while the Figure of Eighty (*Tethea octogesima*) is quite a frequenter of the West End as also is the Scarce Green Silver Lines (*Pseudoips bicolorana*). On Wimbledon Common can be found the Alder Moth (*Apatele alni*), the Triple Spotted Clay (*Amathes ditrapezium*), the Slender Brindle (*Apamea scolopacina*), the Double-stripe (*Mythimna turca*) and the Northern Drab (*Orthosia advena*). This last species has appeared at the Zoo light trap. The oak woods to the immediate north of London constitute probably the best area in the British Isles for the Heart Moth (*Dicycla oo*) which is also still quite common in Richmond Park. That fine moth, the Great Brocade (*Eurois occulta*) has been caught on several occasions in the Area. Among the marsh-frequenting species the Powdered Wainscot (*Simyra albovenosa*) has been of late recorded along the River Lea, while the Brown-veined Wainscot (*Nonagria dissoluta*) has been taken near Weybridge. Oxshott Common is a well-known locality for the Silky Wainscot (*Senta maritima*). There is even a record of the Reed Leopard (*Phragmataecia castaneae*) from Hoddesdon. Several of the geometers call for special note. The August Thorn (*Ennomos quercinaria*) is to be found in Hyde Park. Another speciality to the south-eastern area is the Least Carpet (*Sterrha rusticata*). The Royal Mantle (*Euphyia cuculata*) is often quite common on the downs near Croydon and Mickleham where is also to be found the Juniper Carpet (*Thera juniperata*).

Again some species have been taken in the London Area far from their normal habitats. There are single records of the Grass Eggar (*Lasiocampa trifolii*) from Hampstead and of the Angle-barred Sallow (*Enargia paleacea*) from Highgate in 1871. More recently Webb's Wainscot (*Nonagria sparganii*) was discovered on Bookham Common by Mr. W. L. Finnigan. A specimen of the Dotted Rustic (*Rhyacia simulans*) was obtained at Ewell in 1949 by Mr. H. Tunstall, while the Marsh Ear (*Hydraecia paludis*) was taken at the Zoo in 1953.

With a huge industrial region such as exists in London one may well ask if there is a trend towards melanism in London moths similar to that which appears to pervade some of the manufacturing towns of the North. On the whole there seems to be very little evidence in this direction. Very few black examples of the Brindled Beauty (*Lycia*

hirtaria) have been found in the Metropolis. Dark forms of the Grey Dagger (*Apatele psi*) and of the Sycamore (*A. aceris*) are usual in Inner London, while the deep-brown form (f. *fuscata*) of the Waved Umber (*Hemerophila abruptaria*) for which Central and Northern London are noted, is one of the most interesting local melanic types as also is the black form of the Mottled Umber (*Erannis defoliaria*) present in Epping Forest up to 10% of the population of this species. The Poplar Grey (*Apatele megacephala*), a very prevalent London species, does not appear to be going melanic as it is in the Northern counties. The black form of the Peppered Moth (*Pachys betularia*) appears to be dominant throughout the Area. There have been several records in the suburbs of the Red Underwing (*Catocala nupta*) with a tendency to melanism in the form of brown hindwings, while in July 1951 Mr. H. D. Swain took a remarkable Buff-tip (*Phalera bucephala*) near Putney, having a deep-grey suffusion all over the wings. Is this common insect likely to be turning to melanism?

Has London lost or gained many species of moths in recent or bygone times? Even with the great advance each year of the built-up regions it is doubtful whether many species have been completely eliminated, or their habitats altered to any great extent. A few kinds which have apparently become extinct throughout the country within the last 100 years used to be fairly prevalent in the Area, as for instance the Small Ranunculus (*Hadena dysodea*) which was a frequent visitor to suburban gardens in the 1870's. Even the Orache Moth (*Hadena atriplicis*) used to be caught in Bishop's Wood, Hampstead, in the early part of the 19th century. Another virtually extinct insect the Gipsy (*Lymantria dispar*) was taken in Wandsworth about 1875 and along the Tilbury Marshes, but there seems evidence that these were the offspring of released stock. The Flame Brocade (*Phlogophora empyrea*) which ceased to be a regular breeding species at the end of the last century, has been recorded from Harrow. We read of the Scarce Vapourer (*Orgyia gonostigma*) occurring on Wimbledon Common in the 1860's. Though long since gone from this locality, it is still to be found in Essex near the boundary of the Area. The Small Eggar (*Eriogaster lanestris*) formerly inhabited many parts of North Kent and the Surrey downs, but has not been noted there for many years, while the Scarlet Tiger (*Panaxia dominula*) used to be taken near Reigate, but still occurs in Kent within the Area.

There are a good many instances of recent additions to the resident species in the Area besides sporadic visitors. For example the Large Thorn (*Ennomos autumnaria*) is rapidly spreading towards London from North Kent, several specimens being taken of late in the Dartford district. Within the last ten years by far the most spectacular increase in range has been that of the Pine Hawk (*Hyloicus pinastri*) of which there were only three records for London up to the 1930's. Now it occurs all over the heathland at Oxshott and has even appeared on Wimbledon Common and in Hampstead. Yet another newcomer is the Wormwood Shark (*Cucullia absinthii*). Formerly only found in the West country, since the 1939 War it has turned up commonly in Birmingham and by

1952 it had ranged to Chesterfield coinciding with a rapid spread of its foodplant (*Artemisia absinthium*). During the last few years it has reached London, being recorded from the City, North Kent and Ilford. A further interesting new arrival is the White Colon (*Mamestra albicolon*). Usually associated with sandhills, it has lately become numerous on the outskirts of the Area, penetrating to Putney.

During the past two years several important additions to London's lepidoptera have been made. Among the most remarkable is the Downland Wainscot (*Oria musculosa*) taken by Mr. J. L. Messenger near Weybridge on 6th August 1953 (*Ent. Rec.*, 1953, 65: 362). One was caught by Mr. A. A. Best in 1952 just outside the Area at Byfleet. An example of Dumeril's Luperina (*Luperina dumerilii*) was obtained at light near Arkley, Herts., by Mr. T. G. Howarth on 26th September 1953, while on 17th August of that year Canon T. G. Edwards found that minute noctuid the Small Marbled (*Eublemma parva*) on a fence in Dulwich (*Ent. Rec.*, 1953, 65: 292). On 2nd July 1952 Mr. W. L. Rudland found a specimen of the Pretty Marbled (*Jaspidea deceptoria*) at rest on a wall of a hotel at Reigate. Mr. R. C. Edwards took a Rest Harrow (*Aplasta ononaria*) at Westerham in July 1947. Yet another surprising capture was an example of the Canadian noctuid moth (*Charadra deridens*) by Mr. H. C. Hards at Plumstead in May 1952. A few other special records are worthy of mention though the species are not entirely new to the Area. The Toadflax Brocade (*Calophasia lunula*) was taken as the larva and the perfect insect near Dartford by Mr. E. J. Hare in 1952 and 1953 respectively (*Ent. Rec.*, 1953, 65: 323). The Brindled Ochre (*Dasypholia templi*) was taken by Mr. Howarth at Arkley on 23rd October 1952, the Delicate (*Leucania vitellina*) by Mr. R. C. Edwards at Westerham in 1952 and the Cloaked Pug (*Eupithecia togata*) by Mr. Messenger at light at Weybridge in June 1952.

Before passing on to give a detailed account of each species, I would like to express my extreme indebtedness to the following observers who have been good enough to send in most concise and helpful records which has enabled information on a large number of species to be brought up to date. I accord my warmest thanks to:—

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As before, a great deal of literature about British Lepidoptera has been consulted, including all the leading works and journals, the Transactions of the leading natural history societies, many county and local lists as well as the Victoria County Histories of those counties within the Area. A full bibliography will appear at the end of the work.

For Nomenclature and English names I have once again followed the Index Check-list of British Lepidoptera published by Mr. I. R. P. Heslop in 1947. His classification of the families and species has also been largely adopted. The name of the recorder is in most cases placed after the locality where the record has been made. Records of special interest are given with their reference in the literature for which the following abbreviations have been made:—

Entom. refers to the *Entomologist*; *Ent. Rec.* to the *Entomologist's Record*; *E.M.M.* to the *Entomologists' Monthly Magazine* and *Ent. Gazette* to the *Entomologist's Gazette*.

Foster, *Lep. Herts.*, 1937, refers to the list of the Lepidoptera of Hertfordshire by Dr. A. H. Foster which appeared in 1937 in vol. xx, p. 223 seq. of the Transactions of the Hertfordshire Natural History Society.

Cockerell, *Lep. Middx.*, 1891 refers to a Preliminary List of the Lepidoptera of Middlesex by Dr. T. D. Cockerell which was published in the *Entomologist* for 1891 and in subsequent volumes.

V.C.H. and date refers to the Victoria County Histories and their respective dates of publication.

In the account of the species special standard abbreviations are made for the Vice-Counties included in the Area, which embraces the whole of the county of Middlesex (designated in this paper as M.21) and portions of six other Vice-Counties as follows:—The southern portion of Hertfordshire (H.20), and a similar portion of North Essex (E1.19), the south-west corner of South Essex (E2.18), the north-west portion of West Kent (K.16), the northern area of Surrey (S.17), and a small part of eastern Buckinghamshire (B.24). Inner London is designated by I.L.

The enumeration of a Vice-County after a species indicates that it has been definitely recorded in that area.

A square bracket round the Vice-county abbreviation indicates that the species, though not actually recorded from the area, may be reasonably supposed to exist there.

A round bracket round the Vice-county abbreviation indicates that the species would appear no longer to exist there.

A bracketed species designates that it may be reasonably considered to be extinct throughout the London Area.

An asterisk preceding a species shows that it was recorded in the list of Lepidoptera compiled by the City of London Entomological Society and first published in their *Transactions* for 1898 with a supplement in 1902.

As before, the records are divided under headings from each county so as to facilitate the reference to the occurrence of any species within the London Area. I have laid special emphasis on the observations of recent years which can naturally be greatly augmented and any further records from each region would be much appreciated, particularly as there are very few forthcoming from some areas such as the portions of E1.19 and B.24.

It is hoped that the map, prepared by Mr. C. P. Castell, will be of use in showing the limits of the Area under review, the Vice-county boundaries and some of the principal localities.

SPHINGIDAE.

The first Family of the moths under review comprises the Hawk-moths. These fine insects, some of the most spectacular among our Lepidoptera, are represented by 17 species in the British Isles. Of these ten are resident and the remaining seven species are either regular or sporadic migrants. All the recognised British species have been recorded in the London Area, though the Bedstraw Hawk (*Celerio galii*) and the Spurge Hawk (*Deilephila euphorbiae*) are of extremely rare occurrence. The well-known larvae of this Family, especially those of the Poplar, the Privet and the Elephant Hawks, are a familiar sight in many parts of the Metropolis during the summer months.

**Mimas tiliae* Linn. I.L., M.21, H.20, E2.18, [E1.19], K.16, S.17, [B.24].

The Lime Hawk as already mentioned is one of London's most characteristic moths, being found on the whole more plentifully near the centre of the Metropolis than on its outskirts. Every square, park and garden where there are elms or limes seem to harbour this most variable moth. The 1898 list gives many localities near the centre of London. Recent records include:—

INNER LONDON. City bombed sites (Wheeler); larvae and pupae common in Cripplegate (D. Owen); Hyde Park (C. de W.); one found on a wall in Pall Mall, June 1953 (Craske); one found emerging, June 1952, in Onslow Square (C. de W.); Kensington Gardens (Cockayne).

ESSEX. Loughton and Forest Gate (Sutton).

MIDDLESEX. Common at Hounslow, 1945-51 (Pierce); also at Stanmore (Lorimer).

HERTS. Widely distributed (Foster, *Lep. Herts.*, 1937).

SURREY. Wimbledon Common, numerous (Nott); Barnes (Gardner); Battersea Park (Baynes); less frequent at Weybridge (Messenger).

KENT. Fairly common at Plumstead (Rigden); Orpington and Pett's Wood (Siggs), and at West Wickham (Trundell).

**Lainthoë populi* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Poplar Hawk is an even commoner species than the last, being generally distributed and often really abundant over the whole region under review. The 1898 list does not record it for the City where it has been noted in the bombed sites (Wheeler) in 1951 and in Fore Street in 1953 (Craske). For INNER LONDON, it has also been noted in Westbourne Terrace by Cockayne, also at the Zoo, Regents Park (Bushby).

It ranges to Northern Scotland.

**Smerinthus ocellatus* Linn. I.L., M.21, H.20, E2.18, [E1.19], K.16, S.17, [B.24].

The Eyed Hawk is yet another very common and familiar frequenter of the centre of London and its surroundings where its larva is sometimes quite a pest on fruit trees. The 1898 list gives a wide range of records, though none from Central London and the City. It has been noted recently in

INNER LONDON. City bombed sites, 1953 (Wheeler and D. Owen); Westbourne Terrace (Cockayne); the Zoo, Regent's Park (Bushby), 1952.

MIDDLESEX. Potters Bar (Odell); Hounslow, larvae common (Pierce).

HERTS. Watford, numerous (Penrose); very generally distributed (Foster, *Lep. Herts.*, 1937).

ESSEX. Loughton (Sutton), Ongar and Forest Gate.

SURREY. Common at Putney (Phelps); Richmond and Barnes (Gardner); Wimbledon and Kew (van Emden); larvae at Strawberry Hill (Stallwood) and at Coulsdon and Tadworth (Wheeler); very common at Weybridge (Messenger).

KENT. Plumstead Marshes (Rigden); Belvedere (Showler); West Wickham (Trundell).

The species is found up to Southern Scotland.

**Acherontia atropos* Linn. I.L., M.21, E2.18, K.16, S.17.

This magnificent insect, the Death's Head Hawk, is probably one of the best known moths in the world and one of the greatest migrants, having come on board ship at least 500 miles from land. It has been taken all over the British Isles right up to the Shetlands and has been a frequent visitor to the London Area both as a moth and in the larval state in which it often occurs in great numbers in potato fields. It is doubtful if the moth ever survives the winter in this country. The perfect insect usually appears first in May and June and again in September and October. The 1898 list only mentions about a dozen records from Hampstead, Hackney, Stratford, Walthamstow, Eltham, Greenwich, East Croydon and Southall. Other records include:—

INNER LONDON. Parliament Street (*Entom.*, 1875, 8: 225); one found on a shop window in the Strand, August 1948 (Phelps); Lambeth Palace, on two occasions (Canon Edwards); three full-fed larvae found crawling about at the Zoo, Regents Park, August 1951 (Bushby).

MIDDLESEX. A pupa found at Kenton emerged in October 1940 (H. King); one insect at Potters Bar (Odell); larva at Hounslow (Pierce).

HERTS. One at Northaw, September 1952 (Odell). Foster (*Lep. Herts.*, 1937) gives seven localities within the Area, including St. Albans, Watford, Barnet, Haileybury, Cheshunt and Broxbourne.

SURREY. Imago at Sydenham, 1st September 1939 (Trundell); a moth at Ewell (Rumsey); larva at Claygate (Stallwood); imago at Shepperton (Castle Russell, *Ent. Rec.*, 1901, 13: 277).

KENT. Larva at Hayes, 1950 (Birchenough); imago at Bexley, June 1950 (R. Craske); three at Pinden near Dartford in m./v. trap, in September 1951, September 1952 and May 1953 (Hare); Westerham, one at light, September 1953 (C. Edwards).

**Herse convolvuli* Linn. I.L., M.21, H.20, E2.18, K.16, S.17.

The Convolvulus Hawk, another great migrant, visits our shores probably annually ranging up to the northern Isles and sometimes appearing in great profusion as in 1944 and 1947. The 1898 list and the 1902 suppt. give nearly 50 records for the 10-mile radius with captures in the City, in Piccadilly and in Regents Park. There are many recent records from the Area where this fine insect is taken nearly every year.

INNER LONDON. Two found at the Zoo, Regents Park, 1950 (Bushby).

MIDDLESEX. Enfield, 1925 (Eagles); Finchley (Rumsey); Whetstone (Lovell); Mill Hill, September 1950 (Ellis); Wembley, 1935 (Classey).

ESSEX. Brentwood (E. Williams).

HERTS. Records from East Barnet, Cheshunt Street, Watford and Broxbourne (Foster, *Lep. Herts.*, 1937).

SURREY. A female freshly emerged taken at Morden on 1st September 1943 (R. Craske); one at Godstone on 10th September 1943 (R. Craske); one at Carshalton on 25th June 1952 (Booker); a worn male at Claygate, 1950 (Stallwood); one at Morden Hall, 1945 (Nott); one at Caterham (Welti); a male at Ashtead on 24th September 1948 (Matthews).

KENT. Eltham, 1906 (Canon Edwards); Bromley, 1951 (Trundell); one at West Wickham (Chalmers Hunt); two at Pinden near Dartford in 1945 and 1950 (Hare).

**Sphinx ligustri* Linn. (I.L.), M.21, H.20, E2.18, [E1.19], K.16, S.17.

The Privet Hawk is an extremely familiar species, especially as a larva, in most parts of the London Area. It seems to have become commoner in recent years. The 1898 list and 1902 suppt. give a large number of localities well towards the centre of London, including Hammersmith, Chiswick, Bethnal Green, Hampstead, Hornsey Rise, Holloway, Shepherds Bush, also further afield at Dulwich, Walthamstow and Harrow. Fairly recent records:—

INNER LONDON. Marble Arch, St. Johns Wood, Chelsea and Shepherd's Bush (Tutt, *Ent. Rec.*, 1904, 16: 332).

MIDDLESEX. Hampstead (Bushby); Ravenscourt Park (Uffen).

ESSEX. Wood Green (Lorimer).

HERTS. Haileybury, Watford and Broxbourne (Foster, *Lep. Herts.*, 1937).

SURREY. Merton Park, larvae on lilac (Nott); Wimbledon (van Emden); Oxshott (Stallwood); common at Weybridge (Messenger); Ashstead, 1949 (Chapman); Coulsdon (Wheeler).

KENT. Belvedere, 1952 (Showler); Plumstead (Rigden); West Wickham (Trundell); Orpington, 1950 (Siggs); scarcer in recent years in North Kent (D. Owen).

The species is found up to the northern counties of England.

**Hyloicus pinastri* Linn. M.21, H.20, K.16, S.17.

The Pine Hawk is a most interesting newcomer to the London District. In recent years it has been steadily spreading eastwards from its former headquarters in Dorset and has become quite a common insect since the Second World War in many pine-clad regions, especially in Hampshire, Surrey and Sussex as well as in Norfolk and Suffolk. There are a few old isolated records for the Area, one larva being taken near Wimbledon in September 1887 (*E.M.M.*, 25: 159) and one imago found at West Wickham by W. Watkins on 26th May 1884 (*E.M.M.*, 21: 34). Records for recent years include:—

MIDDLESEX. One found at Hampstead in 1952.

HERTS. One taken at Totteridge on 27th July 1953 (Lorimer).

SURREY. One at Putney, 17th July 1951 (H. Swain); one at Banstead, 4th July 1953 (Gardner); taken at Selsdon in 1953 (Barnett, Trundell); common at Cobham (Purefoy); numerous at Weybridge in 1951 (Messenger); larvae near Box Hill (van Emden).

Celerio euphorbiae Linn. S.17.

The Spurge Hawk, one of the commonest of the Family in Europe, is now probably our rarest Hawk-moth. There appear to be only two authentic records for the London Area.

Two pupae were dug up under an oak-tree in Kew Gardens in March 1907 by G. Nicholson and L. Simms produced imagines of this moth in the following June (Lucas, *Entom.*, 1907, 40: 212).

A larva was found on Field Speedwell (*Veronica agrestis* L.) on 23rd September 1939 in a potato field at Woldingham, Surrey, but not bred out (A. G. Comber, *Entom.*, 1939, 72: 260).

**Celerio galii* Rott. M.21, (H.20), (E2.18), (K.16).

The Bedstraw Hawk has always been a very sporadic migrant with 1888 as its most remarkable year of appearance in our Islands. It has been found up to the Shetlands. Five records are given in the 1898 list. These include for 1888 a larva at Silvertown, another at Edmonton and an imago at Holloway in July of that year; one larva on *Fuchsia* in Chiswick on 13th October 1892 and an insect taken in Victoria Park, no date given. A specimen was taken at Dartford on 4th August 1888 by Youens (*Entom.*, 1888, 21: 231) and another at Buckhurst Hill, Essex, by Tudor on 2nd August of that great year.

Foster in the 1937 List for HERTS. gives two records. The species was taken once at Haileybury and one at Cheshunt Street on 12th August 1870. There appear to be no recent records of this insect in the Area.

**Celerio livornica* Esp. H.20, E2.18, K.16, S.17.

The Striped Hawk, another great migrant, has become a much more frequent visitor to our Islands this century, appearing almost annually in recent years. The chief seasons for big immigrations have been 1906, 1931, 1943 and 1949. The 1898 list only gives two records, from Walthamstow and Upton Park, both in 1883. The few other records include:—

HERTS. One at Cheshunt Street on 15th October 1876 and another at Aldenham in 1898 (Foster, *Lep. Herts.*, 1937).

SURREY. One at Addington, taken by M. Palmer on 12th May 1931.

KENT. One at Pinden near Dartford on 31st August 1949, captured by E. J. Hare.

**Hippotion celerio* Linn. (I.L.), M.21, E2.18, K.16, S.17.

The Silver Striped Hawk used to be of much more frequent occurrence towards the end of last century than during the present one. Its habitat like that of the last species is in Africa and the Near East. It has occasionally been known to breed in this country. The 1898 list enumerates five records, three in 1885, from Blackfriars Bridge, another at Hackney and the third from Ealing. Two examples were taken at Stratford in 1883 and another in 1898 (*Entom.*, 1883, **16**: 260, and *Ent. Rec.*, 1899, **11**: 51). One was taken at Clapton by F. J. Hanbury on 5th September 1895 (*Ent. Rec.*, 1896, **7**: 87). Other records include:—

HERTS. A specimen taken by Rowland Brown near Oxhey (*Entom.*, 1893, **26**: 58).

ESSEX. Larvae found near Epping (Barrett, ii, 54).

SURREY. One found alive at Purley on 5th November 1935 by J. C. Garratt (*Entom.*, 1936, **69**: 15).

KENT. One taken at West Wickham by Mr. Dale (*Entom.*, 1939, **72**: 120).

**Daphnis nerii* Linn. I.L., M.21, K.16, S.17.

This splendid insect, the Oleander Hawk, a denizen of the tropical regions of Africa and Asia, seems to be visiting our shores more often in recent years. 1953 has apparently been a record one for this species with quite a dozen records. There are a number of records for the London Area, several from the central region. We have from the 1898 list one taken at Tottenham in 1884 (*Entom.*, 1884, **17**: 233), two in 1888, one of which was captured near London Bridge (*Entom.*, 1889, **22**: 120) and another at Poplar (*Entom.*, 1888, **21**: 258).

Since then we have records in the following chronological order.

One found in Queen Victoria Street in the City on 18th April 1900 and set by Ashmead, naturalist of Bishopsgate (*Ent. Rec.*, 1900, **12** 347).

One taken at Sydenham on 24th September 1910 by Noakes (*Entom.*, 1910, **43**: 318).

One obtained at Chislehurst by S. Blyth on 14th September 1926 (*Entom.*, 1926, **59**: 301).

One taken at Addiscombe by W. Wenham on 28th June 1935.

One at Ealing on 6th October 1946 taken by M. Chiosso (*Entom.*, 1947, **80**: 35).

One found sitting on a garden fence at 10 Wellington Place, N.W.8, in June 1949, observed by J. Oliver and recorded by Major E. P. Young.

A specimen found at Greenford Park Station on 30th June 1950 by L. Gerard (*Entom.*, 1950, **83**: 212).

A perfect male found on a doorstep in Montagu Square off Oxford Street by M. Duke on 15th September 1950 and brought alive to the Natural History Museum (*Entom.*, 1951, **84**: 10).

One taken by G. Manners in Nevern Square, South Kensington, in late July 1953.

**Deilephila porcellus* Linn. M.21, H.20, E2.18, K.16, S.17.

The Small Elephant Hawk is mainly an inhabitant of downland, though it appears in other types of terrain up to the northern counties and occasionally in southern Scotland. The 1898 list gives records from Hampstead, Finchley, Chiswick, Barnes, Hounslow, Wimbledon and Wanstead. It has more recently reported from:—

MIDDLESEX. Hampton, 1949 (Stallwood); Elstree and Stanmore Common (Lorimer).

HERTS. Foster (*Lep. Herts.*, 1937) gives Watford, Chorley Wood, Haileybury, Hoddesdon and Broxbourne.

SURREY. Banstead, scarce (Gardner); Selsdon (Barnett); Chipstead (Wheeler); Hackbridge, 1950 (R. Craske); only two at Weybridge (Messenger).

KENT. Pett's Wood, 1944 (A. Swain); Joyden's Wood and Dartford Heath (D. Owen); West Wickham (Trundell).

**Deilephila elpenor* Linn. I.L., M.21, H.20, E2.18, [E1.19], K.16, S.17, [B.24].

The Elephant Hawk has become a very familiar species in London in recent years, both as a larva and the perfect insect. The rapid growth of the rosebay willowherb in bombed areas has doubtless accounted for its sudden appearance in Inner London. It is widespread over the country up to southern Scotland. Recent records include:—

INNER LONDON. Fore Street, 1953 (R. Craske); bombed sites in the City, Cripplegate, numerous (D. Owen).

MIDDLESEX. Chiswick (van Emden); Stanmore Common (Lorimer).

HERTS. Watford, scarce (Penrose); Totteridge (Sutton); Cheshunt, Hoddesdon, Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Loughton, Ongar Common (Sutton).

SURREY. Claygate, larvae abundant, 1946 (Stallwood); Selsdon (Barnett); Addington, numerous (Birchenough); plentiful at Weybridge (Messenger).

KENT. West Wickham (Trundell); common at Plumstead (Rigden); plentiful at Orpington and Pett's Wood (Siggs).

Stamford Hill, Highgate Woods, Wimbledon Common, Tottenham, Hackney Marshes and Forest Gate are among the many localities given in the 1898 list.

**Macroglossa stellatarum* Linn. I.L., M.21, H.20, E2.18, [E1.19], K.16, S.17, [B.24].

The Humming-bird Hawk is yet another very well-known species in London often seen hovering over flowers in the parks and even found hibernating in houses. There are few years when this migrant is not seen and sometimes it appears in great numbers. Kilburn, Holloway, Islington and Chiswick are among the many localities mentioned in the 1898 list. Later records:—

INNER LONDON. Three seen at the flowerbeds in St. Botolph's Churchyard on 11th February, 1948 (Ashley).

HERTS. Watford, scarce (Penrose); Totteridge, occasionally (Lorimer). Foster (*Lep. Herts.*, 1937) gives it as widespread and often common.

ESSEX. Loughton, a few (Sutton).

SURREY. Six seen at Strawberry Hill in 1947 (Stallwood); Brixton (Farmer); Kingston (van Emden); Wimbledon, September 1953 (R. Craske); Coulsdon (Wheeler).

KENT. Pett's Wood, numerous in 1944 (A. Swain); Abbey Wood (Showler); one seen on Plumstead Common on 15 October 1953 (Rigden).

Hemaris fuciformis Linn. E2.18, K.16, S.17.

The Broad-bordered Beehawk is chiefly a woodland species occurring where its larval foodplant, the honeysuckle, abounds. It is doubtless to be found in most woodland areas on the perimeter of the London Area. It is not recorded in the 1898 list. It has recently been observed in

ESSEX at Ongar Park Wood (Sutton).

SURREY at Prince's Coverts, Oxshott 1947 and 1948, also several taken there in May 1950 (C. de W.); one at Weybridge (Messenger).

KENT at Darenth Wood (D. Owen).

The species is found up to the north Midlands.

Hemaris tityus Lin. H.20, E2.18, S.17.

The Narrow-bordered Beehawk has a much wider range than the previous species, being found up to northern Scotland and commonly in Ireland wherever its foodplant the Devil's-bit scabious flourishes.

There are a few records for the London Area.

HERTS. Once at Haileybury; larvae common at Broxbourne in 1921 (Edelsten, Foster. *Lep. Herts.*, 1937).

ESSEX. Recorded from Epping Forest by Doubleday (V.C.H. 1903).

SURREY. Bookham Common (Rumsey); Fetcham Common, 1945 and Ashtead, 1947 (Wild); one at Banstead Wood, May 1947 (G. Johnson).

NOTODONTIDAE.

This Family is usually known as the Prominents which are probably more familiar through the many remarkable forms of their larvae, such as those of the Puss and the Lobster Moths. The males in particular are very ready visitors to light throughout the summer months. Of the 25 species recorded for the British Isles no less than 21 have been noted for the London Area.

Cerura bicuspis Borkh. S.17.

This is one of the most local of the whole family, the Alder Kitten, which is distributed sporadically over a large area of England, ranging from Sussex and Kent through the Midlands to North Wales, Cheshire and Lancashire. It is also reported from Norfolk.

There appears to be only one authentic record for the Area. On September 3, 1938, Mr. C. N. Hawkins beat a nearly full-fed larva on Limpsfield Common. It duly pupated, but failed to emerge. He had spotted what he took to be an empty cocoon of this species on a birch trunk in June 1931 in this locality where Mr. F. B. Carr had beaten what he believed to be a larva of this species a few years earlier (*Entom.*, 1939, 72 : 21).

**Cerura bifida* Brahm. I.L., M.21, H.20, E2.18, K.16, S.17.

The Poplar Kitten is very widespread wherever poplar or aspen occurs, the males often coming readily to light, but seldom in numbers. It is found up to the Northern counties.

The 1898 list and 1902 suppt. enumerate 17 localities, from Finsbury Park, Chiswick, Acton, Shepherds Bush, Finchley, Hammersmith, Lee, Stratford and Dulwich. Recent records include:—

INNER LONDON. One taken at m/v trap at the Zoo, Regents Park, June 1953 (Bushby).

HERTS. Totteridge (Lorimer); Haileybury, Watford and Cheshunt (Foster, *Lep. Herts.*, 1937).

MIDDLESEX. Stanmore (Lorimer); one taken by D. Hill in North Wembley, May 1938.

SURREY. Oxshott Station (Cockayne); Merton Park (Nott); Putney, one in 1951 (H. D. Swain) (*Ent. Gazette*, 3: 111); a few at Weybridge (Messenger).

**Cerura furcula* Linn. M.21, H.20, E2.18, [E1.19], K.16, S.17.

The Sallow Kitten is usually more numerous than the last species. It is widely distributed mainly on the outskirts of the Area, but seldom really plentiful. It ranges up to northern Scotland and the Isles. The 1898 list mentions its occurrence in Highgate woods, Finchley, Tottenham Marshes, Chiswick, Sydenham and Harrow. Later records include:—

HERTS. Watford (Penrose); Haileybury, Hertford, Hoddesdon (Foster, *Lep. Herts.*, 1937).

ESSEX. Ongar Park Wood (Sutton).

SURREY. Banstead, July 1952 (Gardner); larvae at Oxshott (van Emden).

KENT. Pett's Wood (A. Swain).

**Dicranura vinula* Linn. I.L., M.21, H.20, E2.18, [E1.19], K.16, S.17, [B.24].

This is another of our most well-known moths both as a larva and the perfect insect. It is prevalent all over the British Isles up to north Scotland and is widespread all over the London Area, even in the City.

INNER LONDON. City Bombed Sites, 1951 and 1952 (Wheeler); larvae common at Cripplegate (D. Owen).

Other records in the suburbs include

SURREY. Wimbledon (van Emden); Putney (Phelps); Merton Park, ova (Nott); Coulsdon (Wheeler).

It is common all over the outskirts of London and the outer regions of the Area.

**Stauropus fagi* Linn. M.21, H.20, E2.18, K.16, S.17, B.24.

The Lobster moth is doubtless best known by its amazingly shaped larva. The insect comes freely to light from May to July and is often common in woodland in southern England and on the outskirts of the Area. The 1898 list only mentions single records from Hampstead, Dulwich and Ealing. Latterly it has been reported from

MIDDLESEX. Stanmore, five males of the dark form to light, June 1953 (Lorimer).

HERTS. Haileybury, Hoddesdon and Watford (Foster, *Lep. Herts.*, 1937); one at Arkley, 1953 (Howarth).

ESSEX. Reported frequently from Epping Forest.

SURREY. Banstead, 1st June 1952 (Gardner); Claygate, 1936 (Keywood); Ashtead (Finnigan); Weybridge, common (Messenger).

KENT. West Wickham (Trundell); Keston (Birchenough).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

(*Gluphisia crenata* Esp.). (E2.18).

This extremely rare species, known as the Dusky Marbled Brown, can only just claim admission to the List, since the two original specimens taken in this country were found at rest in Ongar Park Wood on the boundary of the Area. Doubleday reports that the first was secured in 1840 and another in almost the same spot a year later. Only very few others have ever been recorded in this country.

**Drymonia ruficornis* Hufn. (*chaonia* Hbn.). M.21, H.20, E2.18, K.16, S.17, B.24

The Lunar Marbled Brown is one of the earliest of this Family to appear and is a frequent visitor to light in late April and May. It is exclusive to oak and is widespread in such terrain up to mid-Scotland. The 1898 list mentions Richmond Park as a special locality for it round London.

MIDDLESEX. Stanmore, a few (Lorimer).

HERTS. Reported from Haileybury, Totteridge and Hoddesdon (Foster, *Lep. Herts.*, 1937).

KENT. West Wickham (Trundell); Orpington, 1953 (A. Swain); Bromley, A. Lawrence (*Ent. Rec.*, 1901, 13: 221).

SURREY. One at Kew Gardens (*Ent. Rec.*, 1903, 15: 188); Banstead, 1952 (Gardner); Arbrook Common (Cockayne); Addington area (Birchenough); numerous at Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

**Drymonia trimacula* Esp. H.20, K.16, S.17.

The Pale Marbled Brown appears about a month later than the preceding species and is also a frequenter of oakland regions, but only ranges up to our northern counties. The males come freely to light, but it does not appear to be plentiful in the London Area, only Shirley being given in the 1898 list. Recently it has been reported from

HERTS. Only one at Watford (Penrose) and another taken there in 1904, (Foster, *Lep. Herts.*, 1937); Arkley, one (Howarth).

KENT. West Wickham (Trundell); Orpington, 1953 (A. Swain).

SURREY. Addington (Birchenough); Weybridge, numerous (Messenger).

**Pheosia tremula* Clerck. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17.

This attractive species, the Swallow Prominent, is prevalent in the London Area almost wherever there are poplars. It appears in May and again in the late summer, occurring up to Northern Scotland. Many localities are given in the 1898 list, including Chiswick, Wandsworth Common, Highgate and Richmond Park. Records in recent years include:—

INNER LONDON. Several in 1952 and 1953 at the Zoo, Regents Park, m/v trap (Bushby).

MIDDLESEX. Stanmore, numerous (Lorimer).

HERTS. Totteridge, common (Lorimer); also from East Barnet, Watford and Cheshunt (Foster, *Lep. Herts.*, 1937).

KENT. Orpington and Pett's Wood, 1953 (A. Swain); West Wickham (Trundell).

SURREY. Barnes, 1937 (Gardner); Wimbledon (van Emden); Ewell (Tunstall); Coulsdon (Wheeler); common at Weybridge (Messenger); one at Putney 1936 (D. King); larvae common at Cheam (Menzies).

ESSEX. Widespread and generally distributed (V.C.H. 1903).

**Pheosia gnoma* Fab. (*dictaeoides* Esp.). M.21, H.20, E2.18, K.16, S.17.

The Lesser Swallow Prominent is again a very plentiful insect in most areas where birch abounds right to northern Scotland. It is often common at light in May and August. The 1898 lists mentions it from Hampstead, Highgate, Coombe Wood and Wimbledon Common. Recently reported from

HERTS. One at Watford (Penrose); Totteridge (Lorimer); also from Haileybury, East Barnet and Hoddesdon (Foster, *Lep. Herts.*, 1937).

KENT. Darenth Wood (D. Owen); Orpington (Siggs); West Wickham (Trundell); Abbey Wood (Showler).

SURREY. Banstead, 1952 (Gardner); Addington (Birchenough), common at Weybridge (Messenger); plentiful at Cheam (Menzies); one at Chipstead, 1946 (G. Johnson).

ESSEX. Epping Forest (V.C.H. 1903).

**Notodonta ziczac* Linn. M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Pebble Prominent is a very common and widespread species where sallow flourishes, ranging to N. Scotland. Highgate Woods, Chiswick, Finchley and Harrow are among many localities in the 1898 list. It has been recorded in recent years from nearly all over the Area, except Inner London.

**Notodonta dromedarius* Linn. M.21, H.20, E2.18, K.16, S.17, B.24.

The Iron Prominent is yet another very widespread species, being often plentiful at light in May and August. The larvae are to be found in all birch and alder localities virtually throughout the British Isles. Hampstead Heath, Highgate Woods, Wimbledon Common, Forest Gate and Dulwich are among many places mentioned in the 1898 list. Later records include from

MIDDLESEX. Stanmore (Lorimer); Chiswick, 1918 (A. Sich, *Ent. Rec.*, 1919, 56).

HERTS. Watford (Penrose); Totteridge (Lorimer); Broxbourne and Hoddesdon (Foster, *Lep. Herts.*, 1937).

ESSEX. Ongar Park Wood (Sutton).

KENT. Pett's Wood, 1953 (Siggs); Abbey Wood, 1953 (Showler); West Wickham (Trundell).

SURREY. Banstead (Gardner); Tadworth (Wheeler); Mickleham (van Emden); larvae common on birch at Cheam (Menzies); common at Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

Notodonta anceps Goeze (*trepida* Esp.). M.21, H.20, E2.18, [E.19], K.16, S.17, B.24.

This fine insect, the Great Prominent, is usually fairly common in oak woods in the south during May when the males often abound at light, but there are only a few scattered records for the London Area where doubtless it is more plentiful than supposed. Recent records include:—

HERTS. Haileybury (Foster, *Lep. Herts.*, 1937).

KENT. West Wickham (Trundell).

SURREY. Merton Park (Nott); Weybridge, infrequent, (Messenger).

ESSEX. Reported from Loughton (*Entom.*, 1871, 5: 395).

BUCKS. Black Park, Fulmer (V.H.C. 1905).

Lophopteryx cucullina Schiff. K.16.

The Maple Prominent seems to be restricted to its foodplant in chalk regions, and in range to a few southern counties, Kent, Sussex, Dorset, Cornwall, Bucks, Oxford, also Norfolk, Northants and Cambridge. It has only been found in

KENT, one at light in Abbey Wood in 1953 (Showler), and larvae beaten frequently from maple near Pinden, Dartford (Hare); also taken near Eynsford and Shoreham.

**Lophopteryx capucina* Linn. M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Coxcomb Prominent is another very plentiful widespread species, ranging all over the British Isles. The larvae are readily found on birch and sallow. It is generally distributed over the London Area, except in the most central regions.

**Odontosia carmelita* Esp. (E2.18), K.16, S.17, (B.24).

The Scarce Prominent, which appears towards the end of April, is no doubt more prevalent than supposed and probably occurs in most birch areas up to north Scotland. It has been reported from south Ireland. The insect is prone to sit on birch trunks. Its colour simulates the bark in a remarkable fashion. There are a few London records. The 1898 list only mentions it from Shirley. Other records are:

ESSEX. Epping Forest, Doubleday, 1840 (V.C.H. 1903).

KENT. Dartford and Chislehurst (V.C.H. 1908); West Wickham, 1908 (Nottle); also one taken there on 19th April 1897 (*Ent. Rec.*, 1897, 9: 154); Westerham, one, 1946 (C. Edwards); Pinden, one, 28th April 1952 (Hare).

SURREY. Mickleham, 1933 (R. Craske); larvae at Ashtead in 1944 and 1946 (Finnigan) (*Ent. Rec.*, 1953, 65: 144).

BUCKS. Two recorded from Black Park, Fulmer, in 1857 (V.C.H. 1905).

Ptilophora plumigera Esp. K.16.

The Plumed Prominent, which appears in November, is a somewhat elusive insect, affecting maple and sycamore in chalky districts, mainly in Kent, Surrey, Hants., Dorset, Bucks., Oxon., Glos., Wores. and Suffolk. It has been particularly plentiful in 1953. It has only been found in the Area near Shoreham and Eynsford.

KENT. Many males at light near Shoreham, mid-November 1953 (Cole).

**Pterostoma palpina* Linn. I.L., M.21, H.20, E2.18, [E1.19], K.16, S.17, [B.24].

The Pale Prominent is a fairly abundant species on poplar in southern England up to the Midlands. The males come freely to light in May and August. The 1898 list mentions it from Hounslow, Chiswick, Finchley, Highgate and Wimbledon Common. Recent records:—

INNER LONDON. One taken at m/v trap at the Zoo, 1952 (Bushby).
MIDDLESEX. Stanmore, common (Lorimer).

HERTS. Watford, scarce (Penrose); Totteridge (Lorimer); Bricket Wood, East Barnet, Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Loughton (Sutton).

KENT. Orpington, 1953 (Siggs); Chelsfield (A. Swain); West Wickham (Trundell).

SURREY. Merton Park (Nott); Tadworth (Wheeler); Addington (Birchenough); common at Weybridge (Messenger).

**Phalera bucephala* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Buff-tip is one of our most familiar moths together with the huge clusters of its larvae which often do considerable damage. The species is generally distributed over the whole of the London Area, its larvae being found in the bombed sites in the City precincts.

On July 1, 1951, Mr. H. D. Swain took in his m/v trap at Putney a most remarkable melanic example of this species, with the body and wing markings suffused with deep brown (*vide Ent. Gazette*, 1952, 3: 118, and Plate).

**Closteria curtula* Linn. I.L., M.21, H.20, K.16, S.17.

The Large Chocolate-Tip is a fairly common insect in the South of England among poplar and aspen from which its larva may be readily beaten. The moth appears in May and again often in August. It is widely spread in the London Area with records from

INNER LONDON. One taken in 1953 at the m/v trap at the Zoo (Bushby).

MIDDLESEX. Larvae taken at Potters Bar (Lorimer); Highgate, one (Cockerell, *Lep. Middx.*, 1891).

HERTS. Watford, one (Penrose); Broxbourne (Classey); Haileybury (Foster, *Lep. Herts.*, 1937).

KENT. West Wickham, 1947 (Birchenough); Westerham (C. Edwards).

SURREY. Arbrook Common (Cockayne); Mitcham Common (Collyer); Ewell (Tunstall); Wimbledon, two (H. Swain); Weybridge, a few each year (Messenger); larvae common at Cheam (Menzies).

**Closteria pigra* Hufn. H.20, K.16, S.17, (B.24).

The Small Chocolate-Tip is quite a local species in England ranging up to north Scotland. It is most usually obtained as the larva, feeding in leaves of dwarf sallow. The larvae are reported as numerous in the south-east area of London in the 1898 list. Later records are from

HERTS. East Barnet and Cheshunt Marsh (Foster, *Lep. Herts.*, 1937).

KENT. One larva at West Wickham, 1948 (Birchenough).

SURREY. Larvae numerous in dwarf sallow on Wimbledon Common in 1940 (Bretherton).

BUCKS. Reported from Black Park, Fulmer (V.C.H. 1905).

THYATIRIDAE.

This Family of somewhat Noctuid-like species, commonly called the Lutestings, is usually classed next to the Prominents. The larvae are mainly hairless and without excrescences. All 9 British species are found in the London Area.

**Habrosyne derasa* Linn. I.L., M.21, H.20, E2.18, [E1.19], K.16, S.17, B.24.

The Buff Arches, one of our loveliest moths, is found widely over the Area, the 1898 list recording it from many localities, including Hampstead Heath, Highgate, Maida Vale, Dulwich, Stamford Hill and Walthamstow.

Recently reported from INNER LONDON at the Zoo, 1952 (Bushby).

MIDDLESEX. Potters Bar (Odell); Stanmore (Lorimer).

HERTS. Bricket Wood, East Barnet, Watford, Broxbourne (Foster, *Lep. Herts.*, 1937). Northaw, 1952 (Rutherford).

KENT. Abbey Wood, 1952 (Showler); Orpington, 1953 (Siggs); West Wickham (Trundell).

SURREY. Brixton (Farmer); Barnes (Gardner); Kew and Wimbledon (van Emden); Merton Park (Nott); Coulsdon (Wheeler); Putney and East Sheen, 1928 to 1933 (D. King); Weybridge, numerous (Messenger).

**Thyatira batis* Linn. M.21, H.20, E2.18, [E1.19], K.16, S.17, B.24.

Another most attractive species, the Peach Blossom, is found up to Scotland and is often common in many regions including the London Area. Highgate Woods, Hampstead Heath, Ealing, Wimbledon and Walthamstow are mentioned in the 1898 list.

Reported from MIDDLESEX. Stanmore (Lorimer).

HERTS. Aldenham (H. King); Bricket Wood, Oxhey Wood, Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937); common at Totteridge (Lorimer).

KENT. Hayes (Birchenough); West Wickham (Trundell).

SURREY. Ashtead (Gardner); Banstead (Tunstall); Selsdon (Barnett); Weybridge, fairly common (Messenger).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

**Tethea or Fab.* M.21, H.20, K.16, S.17.

The Poplar Lutestring, though widespread over the country up to north Scotland and the Isles, has few records in the London region. The 1898 list and 1902 suppt. only mention it from Harrow, Coombe Wood, Wimbledon and from Bromley, Kent, where some extreme melanic specimens were taken by W. Cope, also from Bexley, Dartford and Eltham (V.C.H. 1908).

HERTS. Aldenham (H. King); Bricket Wood, Hoddesdon, Broxbourne Woods (Foster, *Lep. Herts.*, 1937).

**Tethea ocularis* Linn. (*octogesima* Hübn.). I.L., M.21, H.20, E2.18, K.16, S.17.

It would appear that the Figure of Eighty has become more common in recent years in the London Area, since the 1898 list only gives it from Woodford and Chingford. Like the last species, its larva inhabits leaves of poplar and aspen where it is readily found in August. It has been taken up to northern England. Lately recorded from

INNER LONDON. Bayswater (Cockayne).

MIDDLESEX. Bedfont (Uffen); Highgate, 1907 (C. Andrewes); Stanmore (Lorimer).

HERTS. Totteridge (Lorimer); Watford, rare (Penrose); Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. Abbey Wood (Showler); Greenwich Park, Bexley, Joyden's Wood and Darenth Wood (D. Owen); Pett's Wood, 1951 (Siggs); Orpington (A. Swain); West Wickham (Trundell).

SURREY. Putney (D. King); common at Putney m/v trap (H. Swain); Merton Park (Nott); Addington (Birchenough); Coulsdon (Wheeler); Selsdon (Barnett); Weybridge, fairly common (Messenger).

**Tethea duplaris* Linn. M.21, H.20, K.16, S.17.

The Small Satin Lutestring is usually prevalent wherever birch occurs up to northern Scotland and in Ireland. The dark form is often as common as the normal pale grey even in the South. Reported in 1898 list and suppt. from Dulwich, Hampstead, Highgate, Norwood, Wimbledon and Eltham. More recent records from

MIDDLESEX. Highgate, 1914 (C. Andrewes).

HERTS. Aldenham (H. King); Bricket Wood and Hoddesdon (Foster, *Lep. Herts.*, 1937)

KENT. West Wickham (Trundell); Abbey Wood and Plumstead Common (Showler).

SURREY. Banstead, 1938 (Gardner); Ewell, July 1951 (Tunstall); Addington (Birchenough); Weybridge, rare (Messenger).

**Tethea fluctuosa* Hübn. K.16, S.17.

The Satin Lutestring is by far the most local species of this Family, being found in birch country in July in mid-Sussex, West Surrey, the Forest of Dean to North Wales, the Lake District, S.W. Ireland and also reported from Aberdeen. There are a few London records from Forest Hill and Shirley in the 1898 list, also from

KENT. Eltham, Dartford and West Wickham (V.C.H. 1908); Westerham (C. Edwards).

SURREY. Limpsfield Chart (Cockayne).

**Asphalia diluta* Schiff. M.21, H.20, K.16, S.17, B.24.

The Lesser Lutestring is often a plentiful visitor to light and sugar in September mainly in the southern regions among oakwoods. Dulwich, Sydenham, Highgate Woods, Finchley and Richmond Park are among localities given in the 1898 list and 1902 supp. Recently recorded from

MIDDLESEX. Stanmore, common (Lorimer); Mill Hill and Harefield (Cockerell, *Lep. Middx.*, 1891).

HERTS. Oxhey Woods, Haileybury, Watford and Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. Abbey Wood (Showler); Pett's Wood, 1953 (A. Swain); West Wickham (Trundell).

SURREY. Addington (Birchenough); Tadworth (Wheeler); two in 1935 at Weybridge (Messenger).

BUCKS. Black Park, Fulmer, about 1855 (V.C.H. 1905).

**Achlya flavigena* Linn. M.21, H.20, K.16, S.17, B.24.

The Yellow Horned is a real harbinger of spring, often appearing at the end of February and usually abundant among birch up to northern Scotland where a larger and deeper coloured form occurs. The 1898 list only mentions it from Shirley, Plumstead, Dulwich and Richmond Park. Latterly reported from

MIDDLESEX. Stanmore, plentiful (Lorimer).

HERTS. Elstree (Lorimer); Bricket Wood and Broxbourne, common (Foster, *Lep. Herts.*, 1937).

KENT. Abbey Wood, 1947 (Showler); common at Pett's Wood in 1950 (Siggs); West Wickham (Trundell); Hayes (Birchenough).

SURREY. Esher (Gardner); Wimbledon Common (Cardew), many seen there in March 1947 (C. de W.); Arbrook (Keywood); Sheen Common and Oxshott (D. King); Banstead (Wheeler); common at Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

**Polyptychus ridens* Fab. M.21, H.20, E2.18, K.16, S.17, B.24.

The Frosted Green is often quite common at light in oak woods towards the end of April and as a larva in July, ranging up to the northern Counties. Only Wanstead and Harrow are mentioned for it in the 1898 list.

MIDDLESEX. Fairly common at Stanmore (Lorimer).

HERTS. Oxhey, one larva in 1938 (Classey); Haileybury, Broxbourne Woods and near St. Albans (Foster, *Lep. Herts.*, 1937).

KENT. West Wickham (V.C.H. 1908).

SURREY. Weybridge, one (Messenger).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

LYMANTRIIDAE.

The Tussock Moths are chiefly known from their remarkably hairy larvae, many of which, like that of the Pale Tussock, have conspicuous tufts along the back. Anatomically this large Family can be readily separated from related families by the absence of the proboscis in the imagines. Some species like the Vapourers (*Orgyia*) have a day-flying male and apterous female. Nine out of the eleven British species have been recorded in the London Area.

**Orgyia gonostigma* Fab. (H.20), E2.18, (K.16), (S.17), (B.24).

The Scarce Vapourer is now one of our most localised insects, being still found on the Norfolk Broads, in the Reading district, in Lincolnshire and near York as well as in at least one restricted locality just within the London Area.

HERTS. A larva was reported from Bricket Wood and there is a single record from Haileybury (Foster, *Lep. Herts.*, 1937).

ESSEX. It still appears to occur in the woods near Warley where larvae were obtained in 1933 (C. de W.).

KENT. The late L. W. Newman found ova among oaks near Bexley and bred out the insects in 1898. Larvae were also found there in 1899 (*Ent. Rec.*, 1898, 10: 277, and 1899, 11: 278).

SURREY. It was found fairly common on Wimbledon Common near Veitch's nursery in the 1860's (V.C.H. 1902).

BUCKS. Reported from Black Park, Fulmer, by Samuel Stevens about 1850 but not seen in recent years in that area (V.C.H. 1905).

**Orgyia antiqua* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Common Vapourer is one of London's most familiar moths, especially in the larval state when it has often been a plague on trees in the parks and thoroughfares, though not so much within the last ten years. It is generally distributed over the whole Area, being recorded from the City bombed sites in 1951 (Wheeler) and from Russell Square in 1953 (Chapman). It is found up to north Scotland.

**Dasychira pudibunda* Linn. M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Pale Tussock is one of the commonest and most familiar species in the Area, both as an imago and as its very characteristic larva. It can be said to be generally distributed and often common over the whole London Area, except Inner London whence it does not appear to have been recorded, though it has been taken at Highgate, Muswell Hill, Finchley and Southgate (1898 List) and more recently at Kew and Wimbledon Common (van Emden). It ranges up to the northern counties.

Dasychira fascelina Linn. H.20, S.17.

The Dark Tussock is a much scarcer species than the foregoing, being chiefly found in heather localities and more often seen as a larva in May after hibernation. It is not recorded in the 1898 list. It ranges up to northern Scotland where a darker form exists than in the south. In the London Area it has only been reported from

SURREY. Larvae found at West Byfleet on the Area boundary (Rumsey).

HERTS. Larvae found at Hoddesdon (G. V. Bull) in 1931 (Foster, *Lep. Herts.*, 1937).

**Euproctis chrysorrhaea* Hübn. (*phaeorrhaea* Don). M.21, H.20, E2.18, K.16, S.17, (B.24).

The Brown Tail is chiefly known for its huge colonies attaining immense numbers in restricted localities, such as Canvey Island and the Isle of Sheppey where untold damage has been done to vegetation and fruit trees by the urticating larvae which hibernate in conspicuous white webs. It seems to be a virtually maritime species along the south-east and southern coasts of England. Fortunately London does not seem to have had a recent visitation, though there are reports of some in the 18th century. There are some scattered records from Harrow, Leyton, Tottenham, Dulwich and Norwood in the 1898 list. Other records from

MIDDLESEX. Mill Hill and Isleworth (Cockerell, *Lep. Middx.*, 1891); Hounslow, larvae, 1949 (Pierce).

ESSEX. Loughton, one, July 1934 (Sutton).

HERTS. Watford and East Barnet (Foster, *Lep. Herts.*, 1937).

SURREY. Kingston Hill and larvae abundant at Ashtead in 1901 (P. Richards) (V.C.H. 1902).

KENT. Plumstead at light (Rigden); Lewisham and Greenwich Park, scarce (D. Owen).

BUCKS. Formerly taken in Black Park, Fulmer, about 1855 (V.C.H. 1905).

**Euproctis similis* Fuessl. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Gold-Tail is an extremely common and widespread species which is generally distributed over the whole of the London Area even in the central regions where it has been taken at light at the Zoo, Regent's Park (Bushby).

**Leucoma salicis* Linn. I.L., M.21, H.20, E2.18, K.16, S.17.

A very conspicuous member of this Family both as a moth and a larva, the White Satin moth can be classed as one of London's specialities, being found sometimes in countless thousands on poplars, especially in one or two spots in the outer suburbs. The 1898 list and 1902 suppl. enumerates it from all over the Metropolis including Islington, Walthamstow, Chiswick, Dulwich, Barnes Common, Hammersmith, Shepherd's Bush and Ealing. It appears to become much rarer the further it occurs from the Metropolitan Centre. It is found somewhat sparingly up to northern England. Recent records include:—

INNER LONDON. Hyde Park and Paddington (Cockayne); the Zoo, 1952 (Bushby); Kensington Gardens (R. Jackson).

MIDDLESEX. Larvae swarming on poplars in Lea Bridge Road, Dalston, in June 1933 (C. de W.).

HERTS. Reported from Watford, Chorley Wood, East Barnet, Cheshunt and Haileybury (Foster, *Lep. Herts.*, 1937).

KENT. Abbey Wood Marshes, 1947 (Showler); larvae seen in hundreds in Plumstead Marshes up till 1951 (Rigden); Orpington, 1953 (Siggs).

SURREY. One in July 1953 at Weybridge (Messenger).

(*Lymantria dispar* Linn.) (M.21), (E2.18).

The Gipsy with its such remarkable sexual dimorphism used to be fairly prevalent mainly in a few restricted areas in the eastern counties where it appears to have been found up till 1927. There has always been a suspicion that its presence in this country was due to introduced stock. In the London Area a few specimens were taken in the early 1870's round Wandsworth, said to have been introduced (*Entom.*, 1872, 6: 190), while quite a lot of larvae were found near Tilbury on sloe bushes in 1871 (*Entom.*, 5: 393). A single example was taken near Uxbridge in 1877 by J. Benbow (*Entom.*, 1878, 11: 21).

**Lymantria monacha* Linn. M.21, H.20, E2.18, [E1.19], K.16, S.17, B.24.

Males of the Nun or Black Arches are common visitors at light during August in oak woods mainly over the south of England, but it is apparently scarce in the vicinity of London for which the 1898 list only gives a single record for Hackney. Others have been reported from:

MIDDLESEX. Larvae at Bishop's Wood, Hampstead and in Pinner Woods in 1882 (Cockerell, *Lep. Middx.*, 1891).

HERTS. Northaw, Hoddesdon, Broxbourne and Haileybury (Foster, *Lep. Herts.*, 1937).

KENT. West Wickham, Hayes and Selsdon (Birchenough).

SURREY. One in 1951 at Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

LASIOCAMPIDAE.

This Family embraces what are usually known as the Eggar Moths, characterised by their hairy larvae and cocoons mostly ovoid in shape. Except in the case of the Fox Moth and the Oak Eggar, the males come freely to light. Out of the 11 recognised British species, ten have been recorded for the London Area.

**Malacosoma neustria* Linn. M.21, H.20, E2.18, [E1.19], K.16, S.17, [B.24].

The Lackey, one of the commonest members of the Family, is well-known for the large nests of spring larvae which can be a serious pest in fruit areas. It occurs up to our northern counties and is widespread in the London Area. Among many localities given in the 1898 list are Chiswick, Barnes, Chingford, Highgate, Dalston and Tottenham. Among recent records:

HERTS. Totteridge, fairly common (Lorimer); widely distributed over the County (Foster, *Lep. Herts.*, 1937).

KENT. West Wickham (Trundell); Purley Oaks (Wheeler); Pett's Wood (A. Swain).

SURREY. Ewell (Gardner); Oxshott (Cockayne, D. King); larvae in numbers, Bookham, 1948 (Keywood); common at Weybridge (Messenger).

Malacosoma castrensis Linn. (H.20), K.16.

This very localised species, the Ground Lackey, is found on the north and south sides of the Thames Estuary on salt marshes where the larvae sometimes abound. There is one locality on the Sussex coast and it extends its range on the east coast up to Harwich. Though it is common round Canvey Island, it does not appear to have been met with much nearer London on the north side of the River, though there are old records for it in the Woolwich Marshes and off Erith (Barrett, ii, 20) where it is still to be found.

HERTS. One taken at East Barnet (Gillum) (Foster, *Lep. Herts.*, 1937).

**Trichiura crataegi* Linn. M.21, H.20, K.16, S.17.

The Pale Oak Eggar is far more often seen as a very conspicuous and variable larva in June than as the moth which appears in September in southern regions, but much earlier in Scotland. The 1898 list gives it cursory mention as being scarce in the south-east district. It has been reported latterly from

HERTS. From Bushey, Watford, Cheshunt, Broxbourne and Haileybury (Foster, *Lep. Herts.*, 1937).

MIDDLESEX. Old records of larvae from Pinner and Mill Hill (Cockerell, *Lep. Middx.*, 1891).

KENT. Larvae at Eltham (V.C.H. 1908).

SURREY. Larvae taken regularly at Oxshott (H. B. Williams, *Entom.*, 1931, 43: 42).

**Poecilocampa populi* Linn. M.21, H.20, E2.18, [E1.19], K.16, S.17.

The December Moth is a very frequent visitor to light in the last two months of the year. It is found up to north Scotland and is widespread over the London Area. The 1898 list mentions it from Hampstead Heath, Muswell Hill, Mill Hill, Southall, Finchley, Harrow and Chingford.

Reported in recent years from

HERTS. Bricket Wood, East Barnet, Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. West Wickham (Trundell); Pett's Wood, 1946 (Siggs); Addington, 1950 (Birchenough); Darent Wood and Joyden's Wood (D. Owen).

SURREY. Burgh Heath (Wheeler); fairly common at Weybridge (Messenger); numerous in 1945 at Chipstead (G. Johnson).

Eriogaster lanestris Linn. M.21, H.20, (K.16), (S.17).

The Small Eggar which appears in March has hardly ever been taken on the wing, but is freely bred from the huge nests of larvae which are very conspicuous on hedgerows in June in the restricted areas where the species occurs in southern England up to North Wales. There are a few London records, though the insect is plentiful on Canvey Island.

MIDDLESEX. Nests of larvae found at Mill Hill, Kingsbury and Oxhey Lane (Cockerell, *Lep. Middx.*, 1891).

HERTS. Reported from Haileybury, Cheshunt, Hertford and St. Albans (Foster, *Lep. Herts.*, 1937).

KENT. Formerly found at Darenth and Greenhithe (V.C.H. 1908).

SURREY. Nests reported from Epsom and Sutton (Sidney Webb) (V.C.H. 1902).

**Lasiocampa quercus* Linn. M.21, H.20, E2.18, K.16, [S.17].

The males of this grand insect, the Oak Eggar, are a familiar sight in July careering about heaths and downlands and moors up to the most northerly limits of these Islands, but it seems to have become distinctly scarcer round London in recent years. Only recorded from Ilford, Finchley and Mill Hill in 1898 list.

HERTS. "Common all over the area" (Foster, *Lep. Herts.*, 1937).

KENT. Common on the downs, also at Darenth Wood and Joyden's Wood (D. Owen).

(*Lasiocampa trifolii* Schiff.) (M.21).

The Grass Eggar is virtually a maritime species occurring along the south and west coasts up to Cumberland. Its only claim to be included in this list is a single record of a specimen taken at Hampstead by Rowland-Brown (Cockerell, *Lep. Middx.*, 1891).

**Macrothylacia rubi* Linn. M.21, H.20, E2.18, E1.19, K. 16, S.17.

The Fox Moth is another extremely familiar member of this Family, both as the larva which often abounds on downland in the autumn and as the powerfully flying males in late May. It is found mainly on the outskirts of the Metropolis, being reported from Wimbledon, Mill Hill, Harrow and Wanstead in 1898 list, and latterly from

MIDDLESEX. Potters Bar, 1952 (Rutherford, Odell).

HERTS. East Barnet and Hertford (Foster, *Lep. Herts.*, 1937).

KENT. West Wickham, Keston and Hayes (Birchenough).

SURREY. Oxshott (Cockayne); Addington, Tadworth, Kingswood and Headley (Wheeler); one about 1920 at Weybridge (Messenger).

**Philudoria potatoria* Linn. M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Drinker, usually associated with marshy areas, is abundant all over the British Isles up to north Scotland and often common in the London Area. Tottenham, Highgate, Finchley, Hackney, Woodford and Wimbledon are among the many localities enumerated in the 1898 list, also Isleworth, Hampstead and Mill Hill (Cockerell, *Lep. Middx.*, 1891). Otherwise it has been found generally distributed over the Area, though reported scarce at Weybridge (Messenger).

**Gastropacha quercifolia* Linn. (I.L.), M.21, E2.18, K.16, S.17.

The Lappet is indeed a most spectacular species with its huge larva and the curious resting position of the moth. It is fairly prevalent in July over our southern counties up to the Midlands and there are many records for the London Area. Hampstead, Highgate, Stratford and Harrow are mentioned in the 1898 list.

INNER LONDON. Pupa found at Addison Road Station (Cockerell, *Lep. Middx.*, 1891).

MIDDLESEX. Mill Hill, 1951 (Ellis); South Mimms, 1948 (Rutherford).

ESSEX. Two females at Woodford Green, 1908 and 1912 (Collenette).

HERTS. Totteridge (Lorimer); East Barnet, Broxbourne, Haileybury (Foster, *Lep. Herts.*, 1937).

KENT. Beckenham, 1942, and West Wickham, 1951 (Birchenough); common at Shoreham, Eynsford, Footscray and Darenth (D. Owen).

SURREY. Oxshott (Cockayne); three at light, August 1946, at Chipstead (G. Johnson); larvae at Epsom Common, 1947, Wallington, 1948 (Collyer); Weybridge, one (Messenger).

SATURNIIDAE.

This huge Family produces some of the biggest moths in the world, the giant Atlas Moths. All the larvae have hairy excrescences. Our only representative is the Emperor Moth.

**Saturnia pavonia* Linn. M.21, H.20, E2.18, K.16, S.17.

The Emperor is indeed one of our most striking moths with its very characteristic larva, often abundant on heaths in August, while in April the males are a familiar sight quartering the ground in the afternoon. It is prevalent in suitable terrain up to Northern Scotland and fairly numerous on the outskirts of London, though the 1898 list only gives Chislehurst, Shirley and Ilford. Other records include:—

MIDDLESEX. Isleworth (Cockerell, *Lep. Middx.*, 1891); Hounslow Heath, larva in 1952 (Pierce).

HERTS. Haileybury, Cheshunt and Colney Heath (Foster, *Lep. Herts.*, 1937).

KENT. Males assembled at Abbey Wood, 1952 (Showler); Belvedere, May 1952 (Rigden); Eltham and Greenhithe (V.C.H. 1908).

SURREY. Oxshott (Cockayne); Coulsdon (Collyer); Headley and Tadworth, 1953 (Wheeler). A few at Weybridge (Messenger).

ESSEX. Epping Forest (V.C.H. 1903).

ENDROMIDAE.

(*Endromis versicolora* Linn.) (K.16).

This splendid insect, the Kentish Glory, the only member of this Family, was formerly an inhabitant of many places in southern England, especially Tilgate Forest. Though it may still exist on Burghfield Common near Aldermaston, Wyre Forest is its only sure habitat now in England. In Scotland it is well distributed in the Highlands where the males may be seen flying at midday during April and the females at rest on the foodplant, the birch trees. It only has very slender claim to the London Area in that for about the first 20 years of this century it was taken fairly regularly in Joyden's Wood in Kent where there is a suspicion it was originally put down. There

is also a report of its presence just before the 1939 War on Oxshott Common, also possibly introduced.

DREPANIDAE.

This small and very specialised Family known as the Hook-tips has only six species resident in Britain, five of which are found in the London Area. Their peculiar larvae with anal clasps upturned can be readily dislodged from their respective foodplants.

**Drepana binaria* Hufn. I.L., M.21, H.20, E2.18, [E1.19], K.16, S.17.

The Oak Hook-tip is quite a common species appearing in May and August and often in October in oakland country up to the Lake District. The 1898 list gives many localities, including Chelsea (*Entom.*, 1891, 24: 260), Willesden, Highgate Woods, Hampstead, Chiswick, Dulwich and Wimbledon Common. Recent records from INNER LONDON, one at the Zoo m/v trap, 1953 (Bushby).

MIDDLESEX. Highgate, 1911 (C. Andrewes); Stanmore, common (Lorimer).

HERTS. Watford, scarce (Penrose); Haileybury, Broxbourne, Hoddesdon (Foster, *Lep. Herts.*, 1937).

ESSEX. Chingford (Cockayne).

KENT. West Wickham, Hayes, Keston (Birchenough); Pett's Wood, 1949 (A. Swain); Westerham, 1951 (Siggs).

SURREY. Ewell, May 1953 (Tunstall); Barnes (Gardner); Wimbledon Common, June 1930 (D. King); common at Weybridge (Messenger).

**Drepana cultraria* Fab. M.21, H.20, E2.18, S.17.

The Barred Hook-tip is exclusive to beech and only found among its foodplant in southern England. The males fly freely in the sunshine in early May and again in August. A single larva obtained at Bishop's Wood, Hampstead, is the only record in the 1898 list. Other records include:—

HERTS. Reported from Watford, Haileybury and Broxbourne (Foster, *Lep. Herts.*, 1937).

SURREY. A female to m/v light at Selsdon, August 1953 (Birchenough); six in 1951 at Weybridge (Messenger).

ESSEX. Plentiful in Epping Forest (Garland, *Ent. Rec.*, 1896, 7: 214).

**Drepana falcataria* Linn. (I.L.) M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Pebble Hook-tip is a common insect among birch in May and August right up to northern Scotland and is very prevalent in the London Area, being reported in the 1898 list from Chelsea (*Entom.*, 1891, 24: 260), Willesden, Highgate, Muswell Hill, Chiswick Streatham and Walthamstow. Recently recorded from MIDDLESEX, Stanmore, fairly common (Lorimer).

HERTS. Watford (Penrose), Haileybury, Hoddesdon, Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Ongar Park Wood (Sutton); larvae in Epping Forest, September 1928 (Collenette).

KENT. Abbey Wood (Showler), Keston and Hayes (Birchenough); Pett's Wood, 1949 (A. Swain); Orpington, 1953 (Siggs).

SURREY. Wimbledon Common (van Emden); Sheen, Putney and Oxshott (D. King); Claygate, 1947 (Keywood); Burgh Heath, 1952 (Wheeler); Bookham (Gardner).

**Drepana lacertinaria* Linn. M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Scalloped Hook-tip is also, like the last species, a birch feeder and has a similar range and habits. It is very widespread throughout the London Area. The 1898 list recorded it from Clapton, Norwood, Sydenham and Shirley, also larvae on birch in Chiswick.

MIDDLESEX. Chiswick, larvae in 1918 (A. Sich, *Ent. Rec.*, 1919, 31: 56); Stanmore, numerous (Lorimer).

BUCKS. Chalfont St. Peter (V.C.H., 1905).

HERTS. Whippendell Wood, Oxhey, Haileybury and Broxbourne (Foster, *Lep. Herts.*, 1907).

ESSEX. Ongar Park Wood (Sutton); larvae at Epping Forest, 1928 (Collenette).

KENT. West Wickham (Trundell); Keston, Hayes and Downe (Birchenough); Orpington, 1948 (Siggs); Pett's Wood, 1937 (A. Swain).

SURREY. Esher and Banstead (Gardner); Tadworth, 1951 (Wheeler); Sheen, Wimbledon Common, Oxshott (D. King). Weybridge, a few (Messenger).

**Cilix glaucata* Scop. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The tiny Chinese Character is an abundant species all over the London Area even in the central region with a record at the m/v trap at the Zoo, Regents Park (Bushby). It is found up to the north of England.

NOLIDAE.

The five British species in this large and rather obscure family are all rather small and inconspicuous. One of their distinguishing features are the small tufts of scales on the forewings, sometimes known as "buttons". The larvae are hairy and make small oblong cocoons. Three species have been recorded for the London Area.

**Nola cucullatella* Linn. M.21, E2.18, E1.19, H.20, K.16, S.17, B.24.

The Short-cloaked is by far the commonest of this Family, being abundant in almost all areas where hawthorn is present. Its minute larvae are a familiar sight in May in the beating tray. It is very prevalent all over the London Area, except the central regions. It

has been taken at Dalston, all over Surrey and Kent, common at Totteridge (Lorimer) and at Chingford (Cockayne).

Nola strigula Schiff. M.21, H.20, E2.18, K.16, B.24.

The Small Black Arches is an extremely local species, found chiefly among oak in many of the southern counties. There are only a very few records for the London Area.

MIDDLESEX. Harrow (Bonhote and Rothschild, 1895).

HERTS. Several taken in July, 1924, near Hoddesdon by Dr. G. V. Bull.

ESSEX. Reported from Brentwood (V.C.H. 1903).

KENT. Recorded from Dartford, Greenhithe and West Wickham (V.C.H. 1908).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

**Celama confusalis* H.-S. M.21, H.20, E2.18, K.16. S.17, B.24.

The Least Black Arches is a fairly prevalent species in the south in May when the imagines may often be found at rest head downwards on tree trunks. It is doubtless much overlooked. A few records for the Area.

MIDDLESEX. Harrow (Bonhote and Rothschild, 1895).

ESSEX. Chingford (Cockayne).

SURREY. Richmond Park (1898 list); fairly common at Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

HYLOPHILIDAE.

This small family which combines the sub-families of Westermaniinae and Sarrothripinae is usually placed now among the Bombyces. The larvae form boat-shaped cocoons which is a characteristic of the group. All four resident British species occur in the London Area. In recent years a further species, *Sarrothripus degenerana*, has been added to the List on the strength of a single example.

**Earias clorana* Linn. I.L., M.21, E2.18, K.16, S.17.

The Cream Bordered Pea is our only member of a large genus, some species of which are serious pests abroad. It is a local species, mainly prevalent where osiers occur. The larvae are readily found in August in the curled leaf tips. The 1898 list mentions it as common in Hackney Marshes, at Lee and Clapton. Also noted from Sydenham, Hanwell and Walthamstow. Other records include:—

INNER LONDON. One at m/v trap at the Zoo, Regent's Park, 1953 (Bushby).

MIDDLESEX. Hammersmith Marshes (Cockerell, *Lep. Middx*, 1891).

HERTS. Larvae on osiers near Broxbourne (Edelsten: Foster, *Lep. Herts.*, 1937).

KENT. Blackheath, rare (D. Owen); Abbey Wood and Woolwich (Showler).

SURREY. Larvae at Elmer's End (Barnett); numerous at m/v light near Barnes Common (H. Swain); one on July 1, 1951, at Weybridge (Messenger).

**Bena prasinana* Linn. M.21, H.20, E2.18, [E1.19], K.16, S.17, B.24.

The Green Silver Lines is often a common moth in oak woods in June over the southern half of England. Its bright green larvae is sometimes abundant in the autumn among oaks. Widespread in the Area; 1898 list gives Highgate Woods, Dulwich, Sydenham and Wimbledon Common. Later records are from

MIDDLESEX. Stanmore (Lorimer); Potters Bar, 1953 (Odell).

HERTS. Widespread at Bricket Wood, Cheshunt, Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937), also Watford (Penrose).

ESSEX. Loughton and Forest Gate (Sutton).

KENT. Orpington and Pett's Wood (Siggs); Abbey Wood, 1952 (Showler); Hayes and West Wickham (Birchenough).

SURREY. Richmond Park (Gardner); Wimbledon Common (van Emden); Selsdon (Barnett); Fairmile (Stallwood).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

**Pseudoips bicolorana* Fuessl. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Scarce Silver Lines, another oak-feeder, is more often seen as a larva in May. Found fairly commonly over southern England up to the north Midlands, it appears to be more widespread in the London Area than the last species; the 1898 lists record it from Highgate, Walthamstow, Southall, Norwood and Wimbledon Common.

INNER LONDON. Taken at the m/v trap at the Zoo in 1951 (Bushby).

MIDDLESEX. Hampstead (Cockerell, *Lep. Middx.*, 1891); common at Stanmore (Lorimer).

HERTS. Totteridge and Elstree, numerous (Lorimer); Bricket Wood, Haileybury, Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest, 1951 (Rutherford); frequent at Woodford Green (Collenette).

KENT. Pett's Wood, 1951 (A. Swain); Abbey Wood (Showler); Greenwich Park, Darenth Wood and Joyden's Wood, scarce (D. Owen).

SURREY. Surbiton Golf Course, 1946-48 (Stallwood); Chipstead, 1947 (G. Johnson); Selsdon (Barnett); Banstead (Gardner); rare at Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

**Sarrothripus revayana* Scop. (*undulana* Hbn.) M.21, H.20, K.16, S.17, B.24.

The Large Marbled Tortrix is one of the few hibernating species among this class of moths. It can often be beaten from thick foliage, such as yew, in mid-winter. A very great number of forms have been named. Recorded in 1898 list from Eltham, Wimbledon Common and Harrow.

MIDDLESEX. Mill Hill and Harefield (Cockerell, *Lep. Middx.*, 1891).
 HERTS. Bricket Wood (Foster, *Lep. Herts.*, 1937).
 KENT. Orpington, 1949 (Siggs).
 SURREY. Weybridge, scarce (Messenger).
 BUCKS. Black Park, Fulmer (V.C.H. 1905).

ARCTIIDAE.

This large Family comprises in this country what are popularly known as the Ermines, Tigers and Footman Moths. The Tigers are among the most brightly coloured moths in the world. All the larvae are hairy, while those of the true Footmen (Lithosiidae) feed exclusively on lichen and algae. Of the 30 species recognised in Britain no less than 24 are recorded for the London Area.

**Spilosoma lubricipeda* Linn. (*menthastri* Esp.). I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The White Ermine, one of our commonest and most well-known moths, is generally distributed and often abundant all over the London Area. In INNER LONDON the larvae were frequent on the City bombed sites (Wheeler) in 1951 and 1952. Larvae were in numbers on a piece of waste ground in 1945 near South Kensington station (C. de W.). In Scotland, especially round Glasgow, a buff form exists.

**Spilosoma urticae* Esp. M.21, H.20, E2.18, K.16, S.17.

The Water Ermine is a much more local species, being found as its name implies mainly in marshy places over southern England. The 1898 list mentions it from Tottenham, Stratford, the Isle of Dogs and from Wimbledon Common in 1889. Latterly recorded from

HERTS. East Barnet and Broxbourne, where larvae used to be common in the marshes (Edelsten) (Foster, *Lep. Herts.*, 1937).

KENT. Plumstead and Abbey Wood Marshes, 1952 (Showler), also a larvae found in the latter locality in 1951 emerged in 1952 (J. Burton).

SURREY. Merton Park (Nott).

**Spilosoma lutea* Hufn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Buff Ermine is about as common as the White Ermine in the London Area in which it is widespread, even in INNER LONDON where larvae were found on the City bombed sites in 1949 (Wheeler) and were abundant near South Kensington station in 1945 (C. de W.); also found at Brixton (Farmer).

**Cycnia mendica* Clerck. M.21, H.20, E2.18, [E1.19], K.16, S.17.

The Muslin Moth with its dimorphic sexes is another plentiful member of this Family in southern England and Ireland where the male is white like the female. It is prevalent in the London Area, being recorded in the 1898 list from Hampstead, Tottenham, Highgate, Finchley and Harrow. Latterly recorded from

MIDDLESEX. Hounslow, 1952 (Pierce); Stanmore (Lorimer).

HERTS. Common at Watford (Penrose); Bricket Wood, Oxhey, Haileybury and East Barnet (Foster, *Lep. Herts.*, 1937).

ESSEX. Ongar Park Wood (Sutton); Buckhurst Hill, 1929 (Collenette).

KENT. Plumstead (Showler); West Wickham, Hayes, Keston (Birchenough).

SURREY. Barnes and Banstead (Gardner); Kew and Wimbledon (van Emden); Charlton, 1948 (J. Burton); common at Weybridge (Messenger).

**Diacrisia sannio* Linn. K.16, S.17, (B.24).

The Clouded Buff is a most striking species as the males in June career over most heathland up to north Scotland. They will also come to the sugar patch. Apparently it has only recently been recorded in the London Area south of the Thames. The 1898 list only gives Chislehurst and Wimbledon Common in 1893 (Kidner). Latterly from

SURREY. Cobham, 1952 (Purefoy); Banstead (Rumsey); Bookham, 1948 (Keywood); Tadworth, 1949 (Wheeler); Claygate and Oxshott (Finnigan); several at Weybridge (Messenger).

BUCKS. Formerly at Black Park, Fulmer, about 1855 (V.C.H. 1905).

**Phragmatobia fuliginosa* Linn. I.L., M.21, H.20, E2.18, [E1.19], K.16, S.17, [B.24].

The Ruby Tiger is often a very common insect ranging up to northern Scotland and appearing in May and again often in August. It has apparently become much more numerous in recent years in the London Area, since the 1898 list only records it from Tottenham and Brockley. Recently reported from

INNER LONDON. City bombed sites (D. Owen); Kensington, 1930 (Dr. Frazer); The Zoo, Regent's Park, 1952 (Bushby).

MIDDLESEX. Stanmore, numerous (Lorimer).

HERTS. Northaw (Rutherford); common at Watford (Penrose); Haileybury, Hertford, East Barnet (Foster, *Lep. Herts.*, 1937).

ESSEX. Ongar Park Wood (Sutton).

KENT. Plumstead, June 1951 (Rigden); Orpington, 1953 (Siggs); West Wickham (Trundell); Hayes and Keston (Birchenough).

SURREY. Ashtead, 1952 (Chapman); Banstead (Gardner); Surbiton (Stallwood); Selsdon (Barnett); Ewell (Tunstall); many at Weybridge (Messenger).

Parasemia plantaginis Linn. K.16, S.17, (B.24).

The Wood Tiger belies its name, since it chiefly affects downlands and moors ranging up to northernmost Scotland and the Isles where the white form of the male (*f. hospita*) is often quite numerous. Not mentioned in the 1898 list. Only records for the Area appear to be

KENT. Formerly at Greenhithe and Darenth (V.C.H. 1908).

SURREY. Seen flying on the downs near Carshalton in June 1951 (Booker).

BUCKS. Formerly at Black Park, Fulmer. (V.C.H. 1905).

**Arctia caja* Linn. I.L., M.21, H.20, E.2.18, E1.19, K.16, S.17, B.24.

The Garden Tiger is one of our best-known moths, often abundant as the larva all over the London Area, even on the City bombed sites from 1951 onwards (Wheeler) and at the Zoo (Bushby). It is found all over the British Isles up to northern Scotland.

**Arctia villica* Linn. M.21, H.20, [E2.18,] [E1.19,] K.16, S.17.

The Cream Spot Tiger, yet another very striking member of the Family, is appreciably less common than the last species. Its hibernated larvae are sometimes quite common in the early spring. It occurs up to the northern counties and is quite widespread in the London Area, having been recorded in the 1898 list from Highgate, Chiswick, Southall, Mill Hill, Harrow, Croydon and Brockley. More recently from

MIDDLESEX. Larva at Scratch Wood in 1948 (Lorimer).

HERTS. Haileybury, East Barnet, Oxhey and Wormley (Foster, *Lep. Herts.*, 1937).

KENT. Eynsford, 1949, Chelsfield, 1951, Orpington, 1953 (Siggs, A. Swain).

SURREY. Banstead (Gardner); Weybridge, two in 1951 (Messenger).

Callimorpha dominulu Linn. (E2.18), S.17, K.16.

The Scarlet Tiger is chiefly a lover of marshy banks of rivers where its larva sometimes abounds in April in southern England. In Kent it occurs in one chalky locality by the sea and among woods in Cornwall. For the London Area it was recorded formerly in

ESSEX by Doubleday in Epping Forest early last century.

SURREY. Near Reigate (Sidney Webb, V.C.H. 1903); one at m.v. trap at Weybridge, 30th June 1952 (Messenger).

KENT. Barrett (ii. 252) quotes Stephens as saying it disappeared from Blackheath about 1829. However, it was taken fairly recently in a restricted locality not far removed from that area.

**Utetheisa pulchella* Linn. (M.21), (E2.18), (H.20), (S.17).

This remarkable migrant, the Crimson Speckled Footman, is a sub-tropical species which used to visit our shores much more frequently in the last century than in the present one, though there were a good many records in 1901. The following shows the recorded captures in the London Area during the past 80 years.

INNER LONDON. One at Stamford Hill, 31st May 1892 (*Entom.*, 1892, 25: 168); one taken in the grounds of the Zoo, Regent's Park, by C. N. Hughes on 21st October 1921 (*Entom.*, 1921, 54: 270).

MIDDLESEX. One captured at the Isle of Dogs on 3rd June (1892 (*Entom.*, 1892, 25: 191)).

HERTS. One at Waltham Cross, October, 1875 (*Entom.*, 1892, 25: 154); one at Oakley Park Station, Barnet, in 1892 (*Entom.*, 1893, 26: 223); one taken at Rickmansworth by M. A. Salmon on 15th August 1949 (Foster, *Herts List Suppt.*).

ESSEX. One at Epping in 1846 (V.C.H. 1903).

SURREY. Four taken at Earlsfield, near Clapham, in 1901 (*Entom.*, 1901, 34: 230 and 297).

**Callimorpha jacobaeae* Linn. I.L., M.21, H.20, E2.18, E1.19, S.16, K.17, [B.24].

The Cinnabar, both as the moth and as the larva, is one of the most familiar of this Family. Though the larva abounds in places on ragwort the species is by no means common everywhere or generally distributed, being only found where its normal foodplant or an allied species occurs. The 1898 list includes in its London localities Bedford Park, Shepherds Bush, Chiswick, Barnes, Highgate, and Isleworth.

INNER LONDON. Common on City bombed sites feeding on the Oxford Ragwort 1949 to 1953 (Wheeler, D. Owen).

MIDDLESEX. Hounslow, occasionally (Pierce).

HERTS. Widely distributed. Common at Watford (Penrose); one at light at Totteridge (Lorimer); Hoddesdon, Broxbourne, Haileybury (Foster, *Lep. Herts.*, 1937).

ESSEX. Numerous at Buckhurst Hill (Chapman); Loughton (Sutton); Epping (V.C.H., 1903).

KENT. Plumstead (Showler); West Wickham, Keston, Hayes (Birchenough); Pett's Wood, Shoreham and Eynsford (Siggs, A. Swain); uncommon in the suburbs (D. Owen).

SURREY. Ewell (Gardner); Coulsdon, Tadworth (Wheeler); Weybridge, common (Messenger).

**Atolmis rubricollis* Linn. (M.21), K.16, S.17.

The Red-necked Footman is a most elusive and local insect which spends most of its time flying about tree tops in June. It is much more readily obtained as the larva by beating lichen-covered branches in the early autumn. It is probably overlooked in its haunts in southern England. The 1898 list only gives a single example taken in a garden at Hornsey Rise by W. Southey. The few other records include:—

KENT. Darent Wood and West Wickham (V.H.C. 1908).

SURREY. Taken in the Box Hill area (Cockayne); on Ashtead Common (Welti); one at Weybridge on 23rd June 1952 (Messenger).

**Nudaria mundana* Linn. M.21, H.20, K.16.

This delicate little species, the Muslin Footman, is normally an inhabitant of dry places where its larva may often be seen sunning itself on stones and walls up to southern Scotland. The 1898 list says that it was formerly abundant at Lee, but became extinct. There are other single records from Highgate Woods, Hammersmith and Harrow, while Mill Hill is mentioned by Cockerell (*Lep. Middx.*, 1891). Other records:—

HERTS. Reported from Hertford, Cheshunt and Chorley Wood (Foster, *Lep. Herts.*, 1937).

KENT. Abundant at Eltham, Lee and Greenhithe (V.C.H. 1908).

**Comacla senex* Hübn. (M.21), H.20, E2.18, K.16, S.17.

The Round-winged Muslin Moth is the smallest member of the Footmen and a denizen of damp places in southern England. It is probably much overlooked. Like the last species, the 1898 list says it was formerly

common at Lee, but since extinct. There is a record from Ealing and one from Wimbledon Common (*Entom.*, 1889, 22: 150). Other records include:—

HERTS. Watford and Haileybury (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping (V.C.H. 1903).

KENT. Dartford and Eltham (V.C.H. 1908).

SURREY. Fairmile Common (Cockayne); Weybridge, a few (Messenger).

**Miltochrista miniata* Forst. M.21, H.20, E2.18, K.16, S.17, B.24.

The Rosy Footman is often quite common among oakwoods in the south during July. It has a number of records in the London Area, being reported from Tottenham, Norwood, Highgate Woods, Shirley and Woodford in the 1898 list. Other records include:—

MIDDLESEX. Hampstead Heath (Cockerell, *Lep. Middx.*, 1891).

HERTS. Widespread, reported from Bricket Wood, East Barnet, Cheshunt, Haileybury and Hoddesdon (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest (*Ent. Rec.*, 1896, 8: 214).

KENT. West Wickham (Trundell); one there in 1951 (Birchenough); Woolwich (Showler).

SURREY. Ashtead and Oxshott (Finnigan); several at Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

**Setina irrorella* Linn. H.20, K.16, S.17.

The Dew Footman is a veritable lover of downlands and cliffs where it is found in suitable localities up to mid-Scotland. It even occurs at Dungeness where its larvae are often abundant on the shingle. Croydon is the only spot given in the 1898 list. There are only a few other records for the Area.

HERTS. East Barnet (Foster, *Lep. Herts.*, 1937).

KENT. Otford and Shoreham (V.C.H. 1908).

SURREY. Plentiful just on the boundary of the Area at Mickleham and Box Hill (G. Johnson, Wheeler and C. de W.).

**Cybosia mesomella* Linn. (M.21), H.20, E2.18, S.17, B.24.

The pretty Four-spotted Footman is exclusively a frequenter of heathland over a wide area up to Scotland. The 1898 list only gives Wimbledon Common, but there appear to be no recent captures there.

MIDDLESEX. Harrow (Bonhote and Rothschild, 1895).

HERTS. Haileybury, Bricket Wood and Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. D. F. Bayne mentions it as an inhabitant of Epping Forest (*Ent. Rec.*, 1892, 3: 84).

SURREY. Taken recently at Esher and on Oxshott Heath (Gardner).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

**Lithosia quadra* Linn. (I.L.), (M.21), (E2.18), (S.17).

This grand species, the Four-spotted Footman, by far the largest of this sub-family with its remarkable sexual dimorphism, is an insect

of great fluctuations. It sometimes appears in huge numbers as in 1938. It occurs sparingly, chiefly among oak over southern England to the northern counties and fairly commonly in south-west Ireland. Its larva spins a cocoon beneath a pad of silk in chinks of bark. There are only a few scattered records for the London Area. The 1898 list gives four single captures and another in the 1902 suppt. at Stratford by C. Murray.

INNER LONDON. One at New Cross taken by A. Cook on 18th July 1891 (*Entom.*, 1891, 24: 196); one taken at Kings Cross on 20th July 1891 by S. Robinson (*Entom.*, 1891, 24: 221).

SURREY. One caught at Kingston Hill by W. H. Kane and another at Norwood by the Rev. Theodore Wood.

It has been suggested that the above captures may be escapes. This is most improbable, since the insect is seldom bred and is known to be a strong migrant.

MIDDLESEX. The only other record is of one taken at Hampstead in August 1917 by Dr. C. H. Andrewes.

Eilema deplana Esp. S.17, (B.24).

The Buff Footman is a very local insect in our southern and eastern counties, chiefly in woodlands. The larvae can often be beaten in May from lichen covering the branches of old yews. Not in 1898 list.

SURREY. Mickleham Downs is a noted locality for this species (Cockayne and Canon Edwards), two there in 1946 (G. Johnson); Weybridge, one in 1951 (Messenger).

BUCKS. Formerly at Black Park, Fulmer (V.C.H. 1905).

**Eilema griseola* Hübn. M.21, E2.18, H.20, K.16, S.17.

The Dingy Footman produces a yellow form (*f. stramineola* Doubleday), which is often commoner in some places than the grey type. Both are denizens of marshy ground where they sometimes abound in August in the southern portion of England. The 1898 list mentions it as scarce in the south-east of London. Other records are for

MIDDLESEX. Two at Harefield in 1887 (Cockerell, *Lep. Middx.*, 1891).

HERTS. Watford and Haileybury (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest (V.C.H. 1903).

**Eilema lurideola* Zinck. M.21, H.20, E2.18, [E1.19], K.16, S.17, B.24.

The Common Footman, as its name implies, is doubtless the most widespread of this group, being generally distributed over England up to the Lake District. Among the localities given in the 1898 list and 1902 suppt. are Hendon, Highgate Woods, Harrow, Wanstead, Dulwich, Norwood and Sydenham. Doubtless common over most of the Area.

HERTS. Totteridge, common at light, 1951 (Lorimer); Bricket Wood, Cheshunt, Watford and East Barnet (Foster, *Lep. Herts.*, 1937).

SURREY. Common at light at Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

**Eilema complana* Linn. M.21, H.20, K.16, S.17, B.24.

Though known as the Scarce Footman, this species is sometimes commoner in its specialised haunts than the preceding one. It mainly affects heathland and sandhills ranging up to North Lancashire where the form *sericea* Gregson occurred until about 1902 and was at one time considered to be a separate species. It is described as frequent at Shirley in the 1898 list and also reported from Norwood and Ealing.

MIDDLESEX. Hampstead (Cockerell, *Lep. Middx.*, 1891).

HERTS. Haileybury (Bowyer, Foster, *Lep. Herts.*, 1937); Arkley, 1953 (Howarth).

KENT. Woolwich (Showler); Pinden (Hare); Selsdon and West Wickham, where two records in 1953 (Birchenough).

SURREY. Oxshott Heath (Cockayne); Esher (Gardner); common most years at Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

Eilema sororcula Hufn. H.20, E2.18, S.17, B.24.

This delightful species, the Orange Footman, may often be seen in the sunshine flying round beech trees in late May. Its larva, like that of *A. rubricollis*, pupates in the autumn. Not in the 1898 list.

HERTS. Whippendell Woods, Bricket Wood, Hoddesdon and Haileybury (Foster, *Lep. Herts.*, 1937).

ESSEX. Reported from Epping Forest by A. Bayne (*Ent. Rec.*, 1890, 250).

SURREY. Box Hill (Cockayne); Great Bookham (Canon Edwards); Ashtead, 1953 (Greenhill).

BUCKS. Black Park, Fulmer, in 1850's (V.C.H. 1905).

ZYGAENIDAE.

This almost world-wide Family which comprises the Burnets and the Foresters (*Procris*) are all day-flying species with very specialised somewhat slug-like larvae which make characteristic silken cocoons on grass and low foliage. Of the 7 species of Burnets (Zygaenidae) and 3 species of Forester recognised in the British Isles, only three of the former and two species of the latter sub-family are found in the London Area. The species are all found in restricted colonies.

**Zygaena filipendulae* Linn. M.21, H.20, E2.18, E1.19, K.16, S.17.

The Six-spot Burnet is by far the commonest species of the Family, ranging up to northern Scotland. The larvae usually pupate high up on grass stems and the insect appears in late June. It is widespread in the London Area. Southall, Ealing, Grove Park, Tooting, Finchley, Harrow and Chingford are given as localities in the 1898 list and there is a record of larvae on Wimbledon Common in 1889. Other records include

MIDDLESEX. Harefield, Ruislip and Isleworth (Cockerell, *Lep. Middx.*, 1891).

HERTS. Common near Totteridge (Lorimer).

ESSEX. Found in Ongar Park Wood (Sutton); Warley (V.C.H. 1903).

KENT. Pett's Wood, 1951 (Siggs); Plumstead Marshes and Lullingstone (Rigden); Shooter's Hill (J. Burton), where the yellow form (*ab. lutescens*) occurs.

SURREY. Addington, July 1953 (Birchenough); Chipstead, common in 1946 (G. Johnson); numerous at Chessington and a few on Surbiton Golf Course (Stallwood) Sheen Common and Leatherhead, 1932 (D. King); Coulsdon, 1942, and Bookham, 1952 (Wheeler); Putney Heath (Phelps); Epsom and Box Hill (van Emden).

Zygaena lonicerae Esp. H.20, E2.18, K.16, S.17.

The Narrow-bordered Five-spot Burnet may be distinguished from the next species by the rarity of forms with confluent spots on the forewings, somewhat larger size and longer antennae, its cocoons high up on grass stems, ova laid flat and the appearance of imagines in early July. It is a denizen usually of open country in southern England where its foodplant *Hippocrepis* occurs. This and the next species are so often confused that exact records of each are difficult to obtain since they never seem to occur on the same ground together. Not in the 1898 list.

HERTS. Haileybury is the only locality given by Foster (*Lep. Herts.*, 1937).

ESSEX. Hainault (V.C.H. 1903).

KENT. West Wickham (Barnett, Trundell); Keston and Biggin Hill, 1953 (Birchenough).

SURREY. Addington, 1953 (Birchenough).

**Zygaena trifolii* Esp. M.21. H.20, K.16. S.17.

The Five-spot Burnet can be separated from the last species by its usually smaller size, its shorter antennae, the frequency of forms with confluent spots on the forewings, its normal appearance in late May and in June and by the fact that it lays its eggs in an ovoid heap. The cocoons are as a rule low down near the ground. Its usual habitat is open country in southern England. The 1898 list and suppt. mentions Mill Hill, Finchley and Croydon for this species. Harefield is also given for it by Cockerell (*Lep. Middx.*, 1891). Another record for MIDDLESEX is Kenton in 1935 (Fletcher).

HERTS. Common at Watford (Penrose).

KENT. Shoreham, 1951 (Wheeler); Greenwich Park, 1947, and Sundridge Park (J. Burton); Lullingstone, May 1948 (Rigden).

SURREY. Juniper Hill, Mickleham, 19th May 1950 (Wheeler); Chessington (Stallwood); Oxshott and Sheen (D. King); two taken on Wimbledon Common, 9th June 1946; larvae on Bookham Common, June 1948 (Keywood).

Procris geryon Hübn. S.17.

The Cistus Forester is usually to be found in early June on chalk downs and in limestone areas in very restricted colonies in the southern counties ranging up to those of northern England.

SURREY. Mickleham and Box Hill are the only spots recorded for it in the Area. It was seen in those localities about 1900 (Barnett).

**Procris statices* Linn. (I.L.), M.21, H.20, E1.18, K.16, S.17.

The Green Forester is another insect of small colonies appearing in June and ranging over southern England up to Scotland and widespread in Ireland. The 1898 list and the 1902 suppl. give Finchley, Mill Hill, Ealing and Harrow Weald for this insect. A recent record for MIDDLESEX is a specimen taken at Kenton on 22nd June 1935 (Fletcher).

HERTS. Reported from Haileybury, Watford, Oxhey and Wornley (Edelsten, Foster, *Lep. Herts.*, 1937).

INNER LONDON. In 1832 it was reported as being in vast numbers on the north bank of the Serpentine in Hyde Park (*Ent. Rec.*, 1954, 66 : 26).

ESSEX. Recorded from Epping Forest (V.C.H., 1903).

SURREY. Bookham Common, June 1950 (Wheeler); also seen commonly there in 1948 (Keywood).

COSSIDAE.

Only three members of this huge Family of species with wood boring and stem feeding larvae occur in the British Isles. They have each been found in the London Area. Many species abroad do considerable damage to timber.

**Phragmataecia castaneae* Hübn. (H.20), (S.17).

The Reed Leopard is one of our most local moths occurring mainly in Wicken and Chippenham Fens in Cambridgeshire and one remote marsh in Dorset, but it is quite likely to inhabit several other localities where there are old and scattered reeds which it prefers to affect.

There are apparently only two authentic records for the Area, one specimen being taken at Sutton on 23rd June 1884 (*Entom.*, 1884, 17 : 184). This insect is mentioned in the 1898 list.

Another example was found in a spider's web near the River Lea at Hoddesdon and reported by Dr. G. V. Bull (Foster, *Lep. Herts.*, 1937).

**Zeuzera pyrina* Linn. I.L., M.21, H.20, E2.18, K.16, S.17, B.24.

The Leopard Moth is another of London's specialities, being very common all over the Metropolis proper where it may often be seen on tree trunks during July. The larvae do considerable damage, especially to fruit trees. Some fairly recent records include:—

INNER LONDON. St. Johns Wood, July 1930 (C. de W.); Regents Park, 1939 (R. Craske); the Zoo, 1953 (Bushby).

MIDDLESEX. Taken on 10th July 1935 at Kenton (Fletcher).

HERTS. East Barnet, Chorley Wood, Watford (Foster, *Lep. Herts.*, 1937).

KENT. Pett's Wood, 1944 (Siggs and Orpington, 1953 (A. Swain); West Wickham, Downe and Haynes (Birchenough).

SURREY. Kew (van Emden); Coulsdon, 1944 and 1946 (Wheeler); Weybridge, common (Messenger); Putney, 1926 (D. King).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

**Cossus cossus* Linn. (*ligniperda* Fab.). M.21, H.20, E2.18, E1.19, K.16, S.17.

The Goat Moth, one of our most spectacular species, is a very common inhabitant of the Metropolis and its immediate surroundings. Its larva often seen wandering in September searching for a pupating site does great damage to large trees in which it takes several years to mature. The species, though without a proboscis, often visits the sugar patch. It is found up to the Highlands. The 1898 list reports it as abundant over the whole of the Metropolitan Area. Recently reported from

MIDDLESEX. Potters Bar, July 1953 (Odell).

HERTS. Widely distributed (Foster, *Lep. Herts.*, 1937).

KENT. Common at Hayes (Birchenough); Greenwich Park, larvae (J. Burton).

SURREY. Kew, Motspur Park (van Emden); Croydon and Claygate (Keywood); Wimbledon, 1950 (R. Craske); Weybridge, scarce (Messenger).

BUCKS. Black Park, Fulmer (V.C.H. 1905).

LIMACODIDAE.

Of this large Family, which is particularly prevalent in Africa, only two species occur in the British Isles. Both are reported from the London Area, though one only somewhat doubtfully. The larvae of this Family have mostly the shape of woodlice.

**Heterogenea asella* Schiff. E2.18, (S.17).

The Triangle is a very small and elusive species, chiefly inhabiting beech woods where it flies in the afternoon sunshine in late June in some of the southern counties. Only recorded in the 1898 list as being local near Croydon by the late W. G. Sheldon.

ESSEX. Mentioned as plentiful in Epping Forest (V.C.H. 1903).

**Apoda avellana* Linn. (*limacodes* Hufn.). K.16, S.17.

The Festoon is mainly an inhabitant of oak woods in the southern and midland counties. The males come freely to light in July. Reported in the 1898 list from Shirley, also late from

KENT. West Wickham (Trundell).

SURREY. Larvae from Bookham Common (Finnigan); also from Ashtead (Gardner).

SESIIDAE.

The Clearwings are a Family of day-flying moths, all of which simulate Hymenoptera or Diptera. Their larvae are exclusively internal feeders on woody stems or in roots. The very active imagines are seldom seen in the wild, except in the early morning when most of them emerge. They are nearly always bred from the foodplant. Of the 16 species recorded from the British Isles, 12 species have been noted in the London Area.

**Dipsosphecia scopigera* Scop. (*ichneumoniformis* Schiff.). K.16.

The Six-belted Clearwing is one of the root feeders, being found mainly in those of trefoils. It flies on downlands in June in the south where it is occasionally taken on the wing. Reported in the 1898 list as occurring on railway banks in the south-eastern area of London. No recent records, though it doubtless is to be found on the downs in Kent and Surrey.

**Aegeria formicaeformis* Esp. M.21, K.16, S.17.

The Red-tipped Clearwing is usually to be found in the vicinity of osiers on which it chiefly breeds and may sometimes be found sunning itself on the leaves in the southern half of England. Tottenham and Mitcham are the only localities given in the 1898 list. Other records include:—

MIDDLESEX. Mill Hill, one specimen taken on 7th July 1947 (Ellis).

SURREY. One bred from Mitcham Common in 1948 (Wild).

KENT. Dartford area (V.C.H. 1908).

**Aegeria culiciformis* Linn. H.20, K.16, S.17.

The Large Red-belted Clearwing often abounds as larvae in birch stumps in the second spring after the trees have been cut. The imago is occasionally to be seen in these habitats in most parts of the country up to Scotland. It is only recorded from Shirley in the 1898 list and for HERTS. from Broxbourne where Dr. G. V. Bull found it commonly (Foster, *Lep. Herts.*, 1937).

Doubtless it is much overlooked and needs to be worked for in likely localities in the London Area where birch has been recently cut.

**Aegeria myopaeformis* Borkh. I.L., M.21, H.20, E2.18, K.16, S.17.

The Small Red-belted Clearwing is a real denizen of the Central London region where the larvae are to be found under the bark of old apple trees in May. Never very common in the south and Midlands. The 1898 list mentions its occurrence at Kensington, Finchley, Holloway, Hackney, Forest Hill, Hounslow and Walthamstow. There are recent records from:—

INNER LONDON. Mornington Crescent (Cockayne); Lambeth (Canon Edwards); Brixton (Farmer).

HERTS. One at Watford (Penrose); Cheshunt and Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. Two at Beckenham in 1950 and 1951 (Birchenough).

SURREY. Putney and East Sheen, 1930 (D. King); Morden (August); Putney (Gardner); Wimbledon (van Emden).

**Aegeria vespiformis* Linn. (*cynipiformis* Esp.) I.L., M.21, H.20, E2.18. K.16, S.17.

The Yellow-legged Clearwing is another well-known inhabitant of the Central London area. Its larvae are usually to be found in May under the bark of oak boles recently cut. The insect is sometimes seen

flying round its breeding site in July. The 1898 list gives it from Croydon, Epping Forest and Richmond Park. More lately reported from:—

INNER LONDON. Hyde Park, a noted locality for it (Cockayne); Lambeth (Canon Edwards).

HERTS. Haileybury (Foster, *Lep. Herts.*, 1937).

KENT. Beckenham (Birchenough).

**Aegeria tipuliformis* Clerck. I.L., M.21, H.20, E2.18, K.16, S.17.

The Currant Clearwing is almost the commonest of the Family. Its larva does considerable damage to currant and gooseberry bushes. It is found well into the centre of the Metropolis and reported in the 1898 list from Tooting, Hackney, Lewisham, Chiswick, Ealing, Highgate, Hounslow and Ilford. Recent records include:—

INNER LONDON. Lambeth (Canon Edwards).

HERTS. Cheshunt, Haileybury and Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Forest Gate (Sutton); Buckhurst Hill, 1951 (Chapman).

KENT. West Wickham, Keston and Downe (Birchenough); Pett's Wood (A. Swain).

SURREY. Wimbledon (van Emden); Ewell, in garden (Gardner); Sheen (D. King); Morden (August).

Aegeria flaviventris Staud. S.17.

The Sallow Clearwing was first discovered as a British species by the late W. Fassnidge in 1925. It is now known to be widespread in the south in the upright small stems of sallows in which small bulbous borings can be found in January of an "even" year, since the larva takes two years to mature. The moth emerges in June and is very seldom seen in the wild state. It is doubtless still to be discovered in many parts on the fringes of the London Area. It has so far been recorded only for

SURREY. From Oxshott (Cockayne), many inhabited stems there in 1932 (C. de W.); often bred from Epsom and Ashtead areas (Finnigan).

Aegeria andrenaeformis Lasp. H.20, K.16, S.17.

The Orange-tailed Clearwing was only recognised as British early this century. The larvae feed in the stems of *Viburnum lantana* L. for two years and can often be located in March before the bush comes into leaf by the cap made by the larva over the entrance hole. Nearly always on chalk in the south. It has been found frequently on the downs on the fringe of the Area.

HERTS. Pupae at Broxbourne, 1907 (Edelsten).

KENT. Old borings at West Wickham (Chalmers-Hunt); Joyden's Wood, 1912 (Kidner); Westerham (C. Edwards).

SURREY. Caterham (Welti); common in Selsdon Woods (Wild); borings in bushes at Epsom (Menzies); borings seen at Banstead (G. Johnson); Chipstead on downs (Finnigan).

Aegeria spheciformis Schiff. K.16, S.17.

The White-barred Clearwing is to be found as a larva in April in the decaying stems and branches of stunted alders in marshy areas, mainly in the southern counties. The insect is occasionally seen near its foodplant in early June. It has been recorded for the London Area for SURREY from Oxshott (Cockayne); one taken at the flowers of Guelder Rose on 9 June, 1919, near Esher (H. B. Williams, *Ent. Rec.*, 1931, **43**: 42).

(Sciapteron tabaniformis Rott.) (M.21), (E2.18), (K.16).

This very rare species, the Dusky Clearwing, seems to have had its origin as a British insect in the London Area. Barrett (ii, 79) quotes Haworth as saying in 1803 that it occurred near London. Doubleday in 1858 mentions three specimens bred by him from poplar and aspen in the Epping Forest area whence a specimen was bred on 1 July, 1912, now in the possession of A. Gardner. Other examples were bred from the Epping area about 100 years ago and pupae found protruding from aspen stems. Stephens also records it from Bexley, KENT, also from Colney Hatch Wood in MIDDLESEX and two specimens recorded by the late Sidney Webb from Chiswick. Apparently no very recent records. It would appear that the insect has become extinct.

**Sesia apiformis* Clerck. H.20, E2.18, K.16, S.17.

This fine insect, the Poplar Hornet Clearwing, can often be found freshly emerged in early July during the morning on the trunks of poplars in which the larvae can do considerable damage. Mainly an inhabitant of the eastern and the south-eastern counties, it was recorded for the London Area in the 1898 list from Wanstead Flats and from Sydenham, where a pupa was extracted from a poplar infested by the Goat Moth. Also reported from

HERTS. Watford, Colney Heath, Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937).

SURREY. Kingston (Ficklin, V.C.H. 1902).

KENT. Dartford (V.C.H. 1908).

**Sphecia bembiciformis* Hübn. (*crabroniformis* Lew.) M.21, H.20, K.16, S.17.

The Osier Hornet Clearwing is a frequent inhabitant of old willows, sallows and sometimes poplars. It is fairly widespread up to the northern counties. Like the preceding species, it is to be found in the early hours lately emerged on the trunks of its foodplant. Doubtless widespread on the outskirts of the London Area. The 1898 list gives Hale End and Eltham. Other records include

MIDDLESEX. Harrow (Bonhote and Rothschild, 1895).

HERTS. Cheshunt, Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937).

Book Reviews.

(All the books mentioned here have been placed in the Society's library).

Bibliography of Key Works for the Identification of the British Fauna and Flora. J. Smart and G. Taylor. Publ. Systematics Assoc., London, No. 1. (Second Ed.) 1953. xi + 126 pp. 12/6, post free from the Systematics Association, c/o British Museum (Natural History), Cromwell Road, London, S.W.7.

The general naturalist who attempts to identify his own specimens has not only the pleasure of the chase, fulfilling that desire most of us have of being detectives, but in his hopeful travels gets to know his specimens. Comparing and contrasting them with allied species he sees the characters used to link them with some forms and distinguish them from others. His worst enemy in this chase is the jungle of scientific literature. This has so far proved too dense for comprehensive survey: no institution in London has had the foresight, or the funds to build up a cumulative Zoological Record, or to continue Sherborn's Index Animalium beyond 1850. What hope then has the amateur naturalist to penetrate this jungle? The answer lies in this bibliography, which is a guide to the literature likely to be of use in the naming of British animals and plants.

The clean set-out of the Table of Contents, which makes it easy to use, prepares one for the high standard of the work itself. It is arranged systematically, 92 of the 126 pages dealing with animals, and for each major group the approximate number of British species is given. One has added respect for those of our members who tackle the 5,000 species of Diptera, to which 12 pages, listing over 100 references, are given. When there is no standard up-to-date British monograph, the relevant European works are listed. An example, one of the seven comprising the section on freshwater fishes, will show the detail given with each reference:—

“Regan, C.T. 1911. The Freshwater Fishes of the British Isles. 287 pp. 37 pls. 27 text-figs. Methuen, London, Keys genera, species. Descriptions. Distribution in and outside Brit. Is. Habits, food, habitat. Very useful.”

There is help here both for the beginner, in the lists of selected general works, and for the more experienced, who will welcome such references as those covering the more obscure groups of fungi and the most useful lists of monographs of families and genera of British flowering plants.

Some idea of the vast amount of new work published in the short time since the appearance of the first edition (1942) can be obtained by comparing the two editions: the botanical part has been largely re-written and sections added on the anatomy of higher plants and on pollen analysis. The section on wood anatomy, which dealt mainly with foreign timber, has been omitted from this new edition.

The care taken by the editors in submitting the work to specialists in many groups has ensured a well-balanced and up-to-date selection. It is, however, a pity that the introductory advice on how to keep the work up-to-date is so meagre. Surely the British National Bibliography or the ASLIB Book List might have had a mention? The worker who wants to go a little beyond the naming of his specimens, to their fossil relations, to their ecology or biochemistry, would have been helped by references to the *Index Bibliographicus*, *Biological Abstracts*, or the *Select List of Standard British Scientific Technical Books* (published by ASLIB): indeed, the Association of Special Libraries might well have been asked to contribute a section on bibliographic links with border sciences, a difficult and increasingly important field for professional and amateur alike.

These are, however, minor criticisms. Within the terms of reference that the authors have set themselves—to aid the identification of specimens—no criticism is offered and no serious naturalist can afford to be without this excellent bibliography.

H. A. T.

The Changing Flora of Britain. Edited by J. E. Lousley. Pp. 204, 6 plates and 25 figures. The Botanical Society of the British Isles. (Obtainable c/o Dept. of Botany, British Museum (Natural History)). 15/-.

Change is one of the most significant aspects of a country's flora and its study one of the fascinating and useful occupations of the amateur botanist. The technical and experimental work involved in this study is perhaps the work of the professional botanist, but much of the vast amount of the field work necessary for assessing the change is open to the amateur. This fact emerges clearly from this book, in which our member, J. E. Lousley, has collated the papers read at the third Conference of the Botanical Society of the British Isles, held in 1952. Prominent amateur botanists contribute to the symposium as well as many well known professionals, who acknowledge the assistance of, and often suggest further lines of research for the amateur. Younger students—the experts of to-morrow—also participate in developing the theme.

The dynamic character of our flora is analysed from many angles; studies on natural and human factors contributing to change are followed by researches into the effects arising from conditions in the glacial eras. Parallels are drawn with changes in some European floras and the component elements—Continental, American and Lusitanian—of our own flora are reviewed in the light of the main theme. Shorter notes consider changes in or describe the advent of particular species. The eminent ecologist Sir A. Tansley outlines the work of the Nature Conservancy in its fight against undesirable change.

Although the above is of general interest, there is much to interest the London botanist in particular. For instance, the five species: *Aegopodium podagraria*, *Chaerophyllum temulum*, *Anthriscus sylves-*

tris, *Tanacetum vulgare* and *Tussilago farfara*, discussed by Prof. A. R. Clapham in his paper on human contributing factors, are common and widespread (see the "Hand List") in our area. Dr. H. Godwin refers to the Lea Valley Arctic Beds in dealing with the glacial periods. Many species of the Continental element used as examples by Dr. S. M. Walters, and of the weeds of arable and waste land noted by Sir Edward Salisbury, are familiar to London's botanists. London has provided a home too for the North American Willow-herb, *Epilobium adenocaulon*, the subject of a note by G. M. Ash who provides a useful key to the genus. These examples should suffice to show that the L.N.H.S. member would not be lost in a wilderness of unfamiliar plants—even his trees and shrubs, e.g. the Box and the Hawthorn come in for special consideration.

Mr Lousley is to be congratulated not only for making available "a very high proportion of information and original thought" but on contributing a useful classification of the aliens that play such a large part in floristic change. He further includes notes on the discussion that followed each paper and provides an index to the whole volume. If some of the material proves "heavy going" to the beginner nevertheless the book should be on his shelf for future reference. If the quality of paper and binding were perhaps a little higher, so, no doubt, would be the price; certainly there is good value in the text.

E. B. B.

The Natural History of the City. R. S. R. Fitter and J. E. Lousley.
Pp. 36, 13 text figs., map. 1953. Corporation of London.
(Obtainable from the Corporation of London Information Kiosk,
Cannon St., London, E.C.3. 2/3, post free.)

Our Society has been investigating and publishing reports on the fauna and flora of the City Bombed Sites for some ten years. Members will, therefore, welcome with gratitude this evidence of the appreciation by the Corporation of London of the value and interest of this work and their publication of this cheap but most attractive and authoritative booklet.

Its authors are old and well-known members of the Society and they have drawn upon the results not only of their own personal investigations but of those of our Survey team. Of necessity, the authors deal mostly with the natural history of the bombed sites, but much interesting information is given of the work of the early naturalists and of some of the plants and animals to be seen in the City before the War. In addition, there is a map showing the extent of war damage and a valuable appendix giving a full list of the wild flowers, grasses and ferns observed from 1941-1952, mammals and birds and a useful page of references. The coloured drawings of a bombed site, covered with wild flowers, make an attractive cover.

C. P. C.

The Book of Box Hill. G. E. Hutchings. Pp. 48, front, text-figs. and map. 1952. "The Friends of Box Hill". 2/-. (Obtainable from The Warden, Juniper Hall Field Centre, Dorking, Surrey.)

Even those who think they know Box Hill well will surely find much that is new and of interest in this little book by the Warden of the Juniper Hall Field Centre. The geology and geography, the view, the Pilgrims Way, the problem of the Old Winter Road, the old field system, some literary associations, the fort and the story of the acquisition of Box Hill by the National Trust all make fascinating reading. The naturalist will, however, find the excellent account of the woodland and wild life even more interesting. Many will be surprised to learn of the existence of four inhabited badger colonies. There is a short but useful chapter by Geoffrey M. Chapman on the birds and a large scale map of the hill and the neighbouring Mickleham Downs, but the addition of the boundaries of the National Trust areas open to the public would make the map even more useful. The booklet is indeed remarkable value.

C. P. C.

Studies on British Beechwoods. J. M. B. Brown. Forestry Commission Bulletin No. 20. Pp. iv + 100, 28 plates. H.M.S.O. 12/6.

Although intended primarily for the forestry student, this Bulletin will be read with great interest by the naturalist. The author has provided an excellent ecological as well as sylvicultural account of our beechwoods, a favourite haunt of the London naturalist. He deals with the history of the Beech in Britain, the ecological classification of British Beechwoods, especially in relation to soil conditions, their flora, the problems of regeneration and establishment of beechwoods, the effects of environmental factors on the form of beech trees and the action of the beech itself on the soil e.g. beech litter and its decomposition. There are chapters devoted to the birds and mammals, to the insects and fungi of beechwoods and to the future of the beech in Britain. Many of us seeing, during and after the last war, the dreadful results of the wholesale felling of our lovely beechwoods and their replacement by conifers will be pleasantly surprised at the appearance of this publication. It is heartening to read in the Forestry Commission's Foreword "the importance of the beech in our woodlands is generally realised" and the author's remarks, "New uses for beech timber and a revival of interest in broad-leaved trees generally promise that, instead of losing ground in Britain, beech is likely to gain in the future."

An appendix gives beech statistics from over three hundred stands in all parts of Great Britain; these include the altitude, slope and aspect of the site, soil conditions, rainfall, and the average height, age and girth of the trees. The work concludes with graphs showing the relation of the height of trees to their age according to the type of soil.

Eighteen of the excellent plates illustrate beechwoods on various kinds of soil and the rest show the damage done to shoots by mammals, insects and frost.

This scholarly work, the result of three years' comprehensive survey, is worthy of a place on the shelves of all naturalists interested in our British trees.

C. P. C.

Flora of Bedfordshire. John G. Dony. The Corporation of Luton Museum and Art Gallery, 1953. 42/-.

The most recently published Flora of an English county, this uses the most up-to-date nomenclature and methods. In addition to useful and readable introductory sections on the history of botanising in the county, and its geology and soils, there is a very interesting chapter on the natural regions which form a basis for the study of the various types of flora which are to be found in the county. These "Habitat Studies" are close examinations of selected areas with a radius of five yards from a marked point, which were visited at least three times a year. This is an idea which any amateur would find interest in applying in the London area, as the great majority of species are "common plants." The book contains the usual analysis of flowering plants and ferns, and also mosses, liverworts, stoneworts and fungi.

B. W.

Other recent additions to the library include:—
Forestry Commission Bulletin No. 19 on *Poplars*. T. R. Peace. H.M. Stationery Office, 1952. 7/6.

Primarily a guide for commercial growers, this booklet is of scientific interest as it includes a key to the chief Poplars grown in Britain and chapters on insect and fungus pests.

Flora of the British Isles. A. R. Clapham, T. G. Tutin and E. F. Warburg. Cambridge University Press, 1952. 50/-.

This supersedes Bentham and Hooker as a general flora and summarises the additional knowledge accumulated in the last fifty years. It has valuable keys and line drawings. Habitat notes, distribution details and chromosome numbers are given with descriptions of species. A glossary, bibliography and index are also provided.

New Concepts in Flowering Plant Taxonomy. J. Heslop-Harrison. Heinemann, 1953. 6/-.

Recent work in ecology and cytogenetics, modern statistical methods and the advance in knowledge of plant distribution are described and their impact on the older "orthodox" methods of classification discussed.

Charles Darwin and his Problems. Evelyn Cheesman. Pp. ix + 166, illustrations. G. Bell & Sons Ltd., 1953. 9/6.

This is a very readable short Life, written primarily for young people. Special prominence is given to Darwin's early years and to the voyage of the Beagle, and there is some account of the development of his theories.

Zoogeography of the Sea. By Sven Ekman. London: Sidgwick & Jackson. 1953. Pp. 417. 42/-.

This important work of reference by the former Professor of Zoology at the University of Uppsala was published originally as *Tiergeographie des Meeres* in 1935; this specially revised English edition was undertaken on the initiative of our Hon. President, Prof. H. Munro Fox. The author gives an account of the faunas of the main oceanic regions and analyses the effects on marine faunas of cold and warm ocean currents, salinity, submarine barriers caused by very deep water and other factors. A very interesting feature of the book is the frequent consideration of the origin and geological history of the present seas and their faunas and of palaeoclimatic conditions. The work will, therefore, appeal more strongly to the keen geologist with an interest in palaeontology than to the average amateur naturalist, who will be unfamiliar with most of the animals mentioned and of the problems involved and who will not find the book easy reading, although the effort would be well worth while. Many of the species mentioned in the text are figured and there are numerous maps and tables. The book concludes with a valuable bibliography of some 600 titles.

C. P.C.

Official Reports for 1953.

Council's Report.

FOR the first time since the war we have to report a fall in membership. The total of 1296 on 31st October is 29 less than last year's total of 1325. However, the number of new members elected, 164, is normal for the post-war period and is in fact four more than that for 1951: the 1952 record of 277 was, of course, exceptional and included the big influx caused by the formation of the South-West Middlesex Group. This year's fall is therefore due, not to fewer members coming in, but to more going out: the increased subscription may be a contributory factor, but the main cause is undoubtedly Council's stricter interpretation of Rule 25, which has shortened the period of grace given to members in arrears with their subscriptions.

To meet the needs of the growing number of members who want to take a more active part in the Society's various surveys and enquiries, two courses are being arranged for 1954. One starting in January is being organised by Professor Jane and is a combined venture of this Society and the London University Department of Extra-Mural Studies. A team of eminent biologists will lecture on the various aspects of woodland ecology, with special reference to the Society's area. The second is a five-day residential Field Course to be held in April at Juniper Hall, Dorking: it has been arranged especially for amateur naturalists by the Council for the Promotion of Field Studies.

Your Council's long search for accommodation for the Library and Collections has at last produced results, thanks to Miss Longfield and to the Royal Society for the Protection of Birds. A series of rooms in the basement of that Society's new headquarters in Eccleston Square has been offered to our Society and by the time this appears in print our Library and Collections should be reorganised in more accessible quarters. There will also be room for Committee meetings and study groups and for those who want to work on the collections, or use the Library for reference purposes.

This does not, of course, entail any change of meeting-place for General or Sectional Meetings, which will still be held either at the London School of Hygiene, or the Linnean Society's rooms. It is unfortunate that members will no longer be able to borrow books on the evenings that they attend meetings at the London School of Hygiene, but it is hoped that this loss will be more than outweighed by the gain of greater accessibility and comfort. The extra duties this will give to our Librarians and Curators can only be justified by a greater use of the Library and Collections by members.

In recent years the Society has had much publicity, both in the press and on the wireless and the Society's name now appears in all the relevant books of reference, but it is only too clear from the General Secretary's correspondence that many members would have joined much earlier had they heard of the Society. Believing that the Public Libraries are the first places to which people turn for information, most of London's larger libraries have been circularised and many will in future regularly receive our Programmes, as will the Professors of Botany and Zoology of the various Colleges of London University.

Our Honorary Vice-President, Mr. L. J. Tremayne, who has recently retired to Sussex, has generously given to the Society not only a useful collection of books for the Library, but also his manuscript records, the results of a lifetime's observation of insects, plants and birds.

At the request of the Council for the Preservation of Rural England, the Society has nominated a representative to serve on the Wild Plants Conservation Board of that Council: Mr. Castell has agreed to serve.

We have to record, with great regret, the deaths of the following members: K. G. Blair, E. D. Bostock, Rev. R. L. Hodgson, A. E. Jolley, Miss C. B. M. Lowe, A. Holte MacPherson, H. C. Woolner.

Librarian's Report.

During the year 1952-53 the library was used approximately one-third less than during the year 1951-52. There have, as usual, been a number of additions by gift and by purchase from the Council's grant. Binding has been kept pretty well up-to-date.

Thanks are again due to the Sectional Librarians who have attended to look after the Library at Sectional Meetings at Keppel Street.

Enthusiasm for the library under Keppel Street conditions has understandably been affected by the prospect of removal and it is to be hoped that at Eccleston Square it will be possible to arrange the library more conveniently and that in the more comfortably appointed quarters it will be widely used.

R. W. HALE, *Librarian.*

Chingford Branch Report.

Field meetings have been held monthly and indoor meetings since October. The indoor meetings began with an exhibition of fungi and a display of a beautiful collection of coloured slides by Mrs. D. Boardman. The next week this lecture was followed up by a fungus foray held jointly with B.E.N.A.

The December meeting was better attended and the live exhibits which Mr. F. Speakman brought along to illustrate his talk were highly appreciated.

The field meetings were better attended than the indoor lectures, partly due to a letter inserted in the weekly local newspaper inviting visitors to the rambles. The average attendance at field meetings was 12, while the indoor average was 7.

The most successful meeting, from the point of view of specimens found and the number of members present, was a visit to Walthamstow Reservoirs. This afforded an opportunity for many of the 23 members present to become acquainted with the various waterside birds.

The grateful thanks of the Branch are due to Mr. E. T. Nicholson, Mr. J. King and Miss M. Scholey for the very interesting walks through Epping Forest, to Mrs. D. Boardman, Mr. H. De Boodt and Mr. F. Speakman for their interesting talks, and to Miss J. Jones for her kind efforts in assisting to organise the field meetings; also to those full members of the Society who take advantage of the Branch meetings.

BERNARD T. WARD, *Chairman.* M. KING, *Secretary.*

South-west Middlesex Group Report.

The past year has shown a steady improvement in membership. Our present number, 73, is made up by 60 ordinary members, 10 associates, and three affiliated Societies.

Although the year began with bad weather and resulting poor attendances at meetings, the situation improved until an average attendance at all Group meetings was 16 members. Nevertheless, it is felt that more of our Group members should be evident at these meetings.

We are going ahead with our Survey at Cranford Park; thanks are due to Dr. Anderson, Mr. C. W. Pierce and Mr A. W. Westrup for their leadership; it is essential that we get more support from our Group members if we are to derive instructional benefit from this Survey. Our Survey leaders are keen to put members on the right lines so that they can work on their own, recording what they see.

It is regretted that we have lost Mr. R. E. Butler as our programme secretary. Much of our success to date is due to the sound footing made by Mr. Butler. Our new programme secretary, Mr. R. E. Parsons, has indeed got down to the job very well. An excellent variety of meetings have been arranged for 1954. We hope members will encourage Mr. Parsons by their attendances.

Mr. P. Chamberlin has undertaken to take the sale of literature over from Mr. Parsons.

A very successful exhibition was held at our first A.G.M. Our thanks are due to the following members:—Mr. A. W. Westrup and Mr. F. J. Hebden, a fine collection of pressed plants; Mr. L. J. Cotton-Sims, a collection of birds' eggs; Mr. R. E. Butler and Mr. B. Ainsley, a collection of rocks and fossils; Miss E. Goom, a collection of bird wings; Mr. C. W. Pierce, a collection of butterflies.

It is now felt that we have consolidated our position with keen enthusiasts of natural history. It is hoped that as a Group, early evidence will appear of much useful knowledge being contributed to the cause and study of natural history in our county.

Our thanks are due to Mr. F. Ballard, Kew Herbarium, and Mr. H. Goom, Borough Librarian, Heston and Isleworth, for lectures during the past year; also to Society members, Messrs. C. P. Castell, R. E. Butler, E. B. Browning, W. G. Teagle, W. H. Spreadbury and N. J. P. Wadley for indoor meetings, and to Messrs. F. R. Mann, R. E. Butler, V. Howlett, H. C. Grigg, C. W. Pierce, D. H. Kent, A. W. Westrup, Miss E. Goom and Miss M. Brown for leading field meetings.

J. E. DILLINGHAM, *Chairman.* E. EVERITT, *Secretary.*

Nature Conservation Committee's Report

1953 has seen the completion of the Society's preliminary County Nature Conservation Reports and of the Nature Conservancy's County Schedules for the Society's area; this marks the end of the first stage of the Society's work on Nature Conservation. The next stage, the preparation of adequate accounts of the natural history of the Conservation Areas, has hardly begun. Such information is essential if the protection and proper management of these areas is to be ensured, and the committee again urges members to collaborate in this interesting and important work.

Within a few months of taking over the post of Representative for Kent, Mr Hyatt had prepared a report on eleven recommended areas and this, the last of our County Reports, was sent to the Nature Conservancy in February. Since then, Mr. Hyatt has visited most of the

areas and found no apparent threats to them with the exception of the rookery near Shoreham Station, where an avenue of beeches housing the rookery was completely felled within a short time during the summer.

Of our eleven recommendations for Kent, part of Lessness Abbey Wood is already maintained as a nature reserve by the London County Council, but only two others have, so far, been scheduled by the Conservancy. Kent, however, is a large county mostly outside the London Area and appears to be exceptionally rich from the naturalist's point of view; 5 National Nature Reserves, 63 Sites of Special Scientific Importance and 19 Additional Areas being scheduled in January 1951. Kent thus contains the largest number of such sites in the country. In spite of this, it is hoped that the Conservancy will study our Report sympathetically and perhaps schedule a few more.

Early in the year, the Conservancy issued their Schedule for Essex, based on Mr. Lousley's and the Society's Reports. In spite of the small proportion of the county within our area, six of our recommendations were adopted as Sites of Special Scientific Importance and one as an Additional Area. Epping Forest was formerly on their list of proposed National Nature Reserves and has been removed from it only because of the difficulty of setting up a reserve under the terms of the National Parks Act, 1949, over land designated for a Public Open Space. These woodlands are considered to be of national importance from the scientific point of view and are scheduled as a Site of Special Scientific Importance. Thurrock Marshes proved to be too industrialised for their preservation as a whole to be practicable, but it is unfortunate, in view of their interest and nearness to London, that Stone Ness Salttings could not have been scheduled, at least as an Additional Area.

In Hertfordshire, as a result of a threat to the trees of Wormley Wood, Dr. Conway of the Nature Conservancy visited the area after consultation with our County Representative, Mr. Melluish, and he is hopeful that this stretch of oak-hornbeam woodland will be scheduled for preservation. Mr. Melluish also conducted a party of the Botanical Section over Cassiobury Park, a scheduled area, and impressed them with the richness of the flora. He has, unfortunately, felt compelled to resign his post on leaving the county. His resignation will be a great loss to the Committee and a worthy successor will be difficult to find.*

Mr. Cramp reports that, thanks to the London County Council, the bird sanctuary in Holland Park has been a great success; a Green Wood-pecker has been reported to have bred and a Sparrowhawk attempted to nest.

The Surrey County Development Plan became available for public inspection in April and Mr. Groves, our Surrey Representative, spent a day with a member of the County Planning Staff checking over the plan to see if the proposed development was likely to affect any of the 33 sites listed by the Society. There were a few instances where the boundaries did, in fact, differ from those outlined on the County Plan

*Since this report was written, Prof. E. H. Warmington has kindly offered to fill the post.—C. P. C.

maps, but these, however, were not considered to be at sufficient variance to merit submitting objections on the Society's behalf to the Ministry of Housing and Local Government. Most of our areas either came within the Surrey County's Green Belt Scheme or were listed under areas whose present status is to be maintained.

Dissatisfaction was expressed last year at the inadequate number of the Society's recommended areas included in the Nature Conservancy's Schedule for Surrey. Only eight out of the original 33 had been selected and of these few, most were situated on the chalk. It is most satisfactory that a study of our report persuaded the Conservancy to schedule a further five areas as Sites of Special Scientific Importance, viz., Fetcham Mill Pond; Epsom and Ashtead Commons; Arbrook, Esher and Oxshott Commons; Wimbledon Common and Putney Heath; and Chelsham and Worms Heath. These appeared in their New Notifications and Amendments Schedule issued in March and sent to local authorities.

Miss Longfield represented the Society at the public enquiry held by the London County Council to consider the protests made by the Society, the Royal Society for the Protection of Birds, and other bodies at the threat of building development in the woods of Sydenham Hill, referred to in last year's Report.

Early in the year, the executors of a $5\frac{1}{2}$ acre property in Wimbledon, consisting of a large lake with wooded surroundings, sought advice from the Nature Conservancy on the possibility of its establishment as a sanctuary. The Conservancy asked members of our Conservation Committee to visit the property and to report on its suitability as a reserve and to make suggestions for its management. Messrs. Castell, Groves, Pegram and Teagle went over the grounds on February 28th; a combined report, illustrated by photographs, was compiled by Mr. Teagle and forwarded to the Nature Conservancy.

Through a local ornithologist, the Royal Society for the Protection of Birds drew the Society's attention to a proposal of the Croydon Corporation to dump household refuse, surplus excavated material and ash on a further 37 acres of Mitcham Common and to build this up to an unnatural level to form a kind of 'sports arena'. The outcome of such a project would be the destruction of what is probably the last remaining natural part of any size left on the common. The undrained hollows of this area, surrounded as they are by sallow bushes, support a surprisingly good bird population (both breeding and visiting) and a prolific insect fauna (including some interesting species). All this would be lost to the naturalist. A strong letter of protest was sent on behalf of the Society to the Surrey Planning Committee with whom rested the decision to allow or stay permission for the Croydon Corporation to proceed with their plan. Contact was made with the Commons Preservation Society, and they, in agreement with us, submitted a similar protest. The Croydon Natural History Society was also urged to send a protest as many of their members had an active interest in the common. Later, the Nature Conservancy were asked to intervene in

protest against such a scheme. The Surrey Town and Country Planning Committee, after consideration, felt they were not justified in rejecting the scheme on planning grounds and they consented to the proposal in principle, subject, however, to several stipulated conditions. No tipping has, so far, taken place on the area in question.

Of some 90 recommended Nature Conservation Areas, the Society has had the satisfaction, this year, of seeing 41 of them scheduled in the following categories: three National Nature Reserves, 30 Sites of Special Scientific Importance and eight Additional Areas. A list of these is being prepared for publication in the *London Naturalist*. (See p. 6.)

CYNTHIA LONGFIELD, *Chairman*. C. P. CASTELL, *Secretary*.

Sectional Reports.

Archaeological Section.

Indoor Meetings. The following meetings were held during the year:

- 24 Feb. Sutton Hoo Treasure. C. W. Phillips.
- 19 May. Discoveries in the City, 1950-3. I. Noel Hume.
- 29 Sept. Pre-Roman and Roman Relics of London. E. Yates, F.S.A.
- 3 Nov. Some Treasures of Westminster Abbey. L. Tanner, M.V.O.

All these meetings were well attended and of exceptional interest, and lively discussions ensued.

Outdoor Meetings.

- 17 Jan. Lincoln's Inn. V. Howlett.
- 21 Feb. Temple and Fleet Street. R. W. Hale.
- 21 Mar. Old St. Marylebone. Members of St Marylebone Society.
- 18 April. Harrow-on-the-Hill. T. L. Bartlett.
- 16 May. Greenwich Hospital. W. C. Cocksedge.
- 20 June. Lingfield. T. Eades.
- 19 Sept. Wimbledon Common. C. P. Castell.
- 17 Oct. British Museum (Sutton Hoo Treasure). W. C. Cocksedge.
- 21 Nov. Public Record Office Museum. A member of the Staff.
- 12 Dec. Kensington Palace and the London Museum.

These meetings were for the most part exceptionally well attended, some of them by 40-50 persons, although the weather was not always too genial. The meetings at Greenwich Hospital and Lingfield, however, were poorly supported presumably due to the incidence of the Coronation and its many activities.

Unfortunately, our Secretary, Miss Staines, has resigned after serving the Section very ably for the past few years and it has not been possible at present to find anyone to supply her place. The Committee would be very pleased to hear from any member of the Society who would be prepared to act in this capacity. The work is interesting, important and not too onerous. The Committee has considered and is

considering the future policy of the Section. It is felt that rambles of a topographical and general nature although very attractive should be restricted to occasional fixtures and that for the most part, definite objectives should be aimed at of a purely archaeological nature, thus affording an opportunity of more intensive work and of integrating the activities of the Section with the scientific aims of the Society.

Reading Circle. Miss E. Welford has very kindly taken on the duties of Secretary in the place of Mr. Austin. She would be very pleased to enrol members and receive subscriptions for the circulation of "Antiquity" and the "Archaeological News-Letter".

W. C. COCKSEdge, *Chairman.*

Botanical Section.

Membership. The section has now 308 members, a decrease of 6 during the year.

Indoor Meetings. One General and 4 Sectional meetings were arranged, with an average attendance of 45. One Sectional meeting was in the form of an exhibition arranged by members.

Outdoor Meetings. Thirteen excursions have been held, with an average attendance of 12. Two meetings were in collaboration with other Sections and several were arranged so as to be specially suitable for beginners. During the winter months rambles were held for the observation of Trees and Shrubs, and for Mosses. Some excursion localities and plants seen were as follows:—Chipstead—*Stachys arvensis* (L.) L., *Pimpinella major* Huds. Leatherhead—The mosses *Thamnium alopecurum* (Hedw.) B. & S., *Aloina rigida* (Hedw.) Kindb. and *Fissidens minutulus* Sull. sec Braithw. Cassiobury Park—*Alchemilla vestita* (Buser) Raunk., *Barbarea intermedia* Bor. Farley—*Lathraea squamaria* L., *Gentianella anglica* (Pugsl.) E. F. Warburg. Cudhain—*Cephalanthera damasonium* (Mill.) Druce, *Sedum telephium* L. Hanwell tip—*Vicia lutea* L., *Lathyrus aphaca* L. Ruislip—*Serratula tinctoria* L. Brentwood—*Oxalis europaea* Jord. Isle of Sheppey—*Tetragonolobus maritimus* (L.) Roth., *Dorycnium gracile* Jord.

D. H. KENT, *Chairman.* F. E. WRIGHTON, *Secretary.*

Ecological Section.

After many years of continued increase, membership dropped for the first time, decreasing by 15 to 222.

The Section was responsible, during the year, for the provision of three General Meetings, when lectures were given on "An Introduction to Ecology" by Mr. C. P. Castell on May 12th; on "Shells of the Seashore" by Mr. G. L. Wilkins on July 7th, and on "Domestic Insects in Birds' Nests" by Mr. B. J. Southgate on September 15th.

Three Sectional Meetings were held, when Mr. S. Cramp lectured on December 16th on "Some Animal Population Problems" and Dr. J. P. Harding on "The Ecology of Water Fleas" on March 17th. On April 21st, short talks were given by the following members:—Mr. C. P. Castell on "The Vegetation of the Gravels of Headley Heath", Mr. J.

F. Shillito on "The Ecology of British Dodders" and Mr. F. E. Wrighton on "Recent Work on Plant Ecology at the City Bombed Site".

In spite of snow and of continuous rain on two of the monthly Sunday field meetings at Bookham Common, the average attendance increased again to 17. The botanical team concentrated on the recording of the distribution of the species of flowering plants and a badly-felt want has, at last, been met by their production of an annotated plant list and some notes on the principal types of vegetation, to appear in the *London Naturalist* for 1953. (See p. 25.)

A few members are maintaining the City Bombed Site Survey, but more help is badly needed and new workers would be welcomed by the organisers, Messrs Currie and Wrighton.

In addition to the two surveys, four field meetings have been arranged:—to Headley Heath, on June 28th, led by Mr. Castell, to study the regeneration of heath vegetation on gravel; to Scratch Wood, Mill Hill, led by Prof. E. H. Warmington, to study woodland vegetation on July 4th; to Limpsfield Common on September 27th to note changes since the Society's Pre-War Survey, led by Mr. Castell; to Norbury Park, Mickleham, with the Entomological Section, finishing up at Juniper Hall Field Centre, by invitation of Mr. J. H. P. Sankey.

Thirty-nine members now subscribe to the Reading Circles for the *Journals of Ecology* and *Animal Ecology*. Owing to illness, Mr. Burkill has been compelled to relinquish the running of the Reading Circle for the *Naturalist* and the *North Western Naturalist* and Mr Norkett has kindly agreed to take it over as an activity of the Section.

G. BEVEN, *Chairman*. C. P. CASTELL, *Secretary*.

Entomological Section.

There has been a slight decrease in membership to 168. With regret we record the death of a Country Associate, E. D. Bostock, a lepidopterist, after 45 years' membership.

The indoor programme attracted as large audiences as last year and commenced with an interesting discussion on "Insect Migration" opened by Mr. J. F. Burton, F.R.E.S., on 28th October, 1952. On 17th February, Mr. J. H. P. Sankey, B.Sc., gave a talk on "British Harvest Spiders". At a general meeting on 7th April, Miss T. Clay, Vice-President of the Royal Entomological Society, spoke on "Birds and Bird Lice". On 26th May, J. D. Carthy, M.A., Ph.D., F.R.E.S., lectured on "The Home-going Ant". Following the Annual Sectional Meeting held on 17th November a discussion on "Breeding Insects" was opened by Mr. E. E. Syms, F.R.E.S.

Meetings devoted solely to exhibits and short notes were held on 30th June and 22nd September. The exhibits at the various meetings were of a high standard and included among other novelties to this country a specimen of *Agathomyia falleni* Zett. (Dipt., Platypezidae) the first record for Great Britain, taken on the Section's field meeting at Box Hill on 21st September, 1952, by Mr. L. Parmenter.

Eleven field meetings were held, at Whippendell Wood, Brookwood, Epping Forest, Wimbledon Common, Darenth Wood, Ruislip, Dartford Marshes, Otford, Banstead Wood, Benfleet and Norbury Park. Over 40 members attended these and support was given to the Bookham Common and Cripplegate surveys throughout the year. The presence of several of the Society's botanists on some of these field meetings has been of great assistance in the correct identification of food plants especially as five species of Diptera previously unknown in this country were found as leaf-miners during the field meetings this year.

Unfortunately Mr. A. E. Le Gros on being transferred to Shropshire had to hand over the Secretaryship before the end of his year of office to Mr. L. Parmenter. Our thanks go to Messrs. J. F. Burton and D. F. Owen, both now at Oxford, for their service on the Committee and we welcome as new members of the Committee Mr. B. L. J. Byerley, F.R.E.S., a past president of the Amateur Entomologists Society, Dr. J. L. Cloudsley-Thompson of King's College, London, and Mr. K. H. Hyatt of the British Museum (Natural History) and the return to the Committee of Mr. R. M. Payne, a past Secretary of the Section.

C. G. M. DE WORMS, *Chairman.* A. E. LE GROS, L. PARMENTER,
Secretaries.

Geological Section.

A steady flow of new members has more than off-set losses due to resignation, etc., and membership of the Section rose to 128 by the end of the year (including 5 School Associates and 5 Family Members), an increase of 3 over last year. Sixteen field meetings, including four Museum visits, were held. The average attendance at these meetings was 26, a record for the Section. At none of these meetings did the attendance fall below 16 (2 above last year's average). The Section was responsible for four indoor meetings at which the average attendance was thirty-one, eleven less than the average in 1952.

Mr. H. G. Singleton, at his own wish, was not re-elected to the Committee for 1953 and Mr. J. N. Carreck's appointment as Secretary for temporary geological exposures was not confirmed. Miss M. M. Brown was elected Secretary to the Geological Field Research Committee and also as Librarian in place of Mr. M. Kerney. The remaining officers and Committee were the same as for 1952.

At a General Meeting held in June Dr. I. W. Cornwall of the Institute of Archaeology spoke on "Early Man" and Mr. C. P. Castell gave a talk on "Joseph Prestwich, a Pioneer of London Geology" at the Section Annual General Meeting in October. An Exhibition of Sound Films (kindly lent by the Petroleum Film Bureau) was held in January, and in March an evening was devoted to an Exhibition and short talks.

At the first of the two visits to the British Museum (Natural History) Dr. W. E. Swinton gave a demonstration on "Fossil Reptiles" and on the second occasion Mr. H. A. Toombs introduced members to

"The Use of a Geological Library." The Geological Survey Museum was visited twice: in February Mr. M. A. Calver demonstrated "Coal and the Coal Fields" and in November Mr. B. Ainsley described the exhibits illustrating the geology of the London Area in place of Mr. E. F. Bunt, who was unable to attend. One of the most successful field meetings of the year was held jointly with the Botany Section in September at the Isle of Sheppey. The party travelled from London in two coaches, and fifty members and friends assembled at Warden Point, Minster. There the two Sections separated to follow their own programmes until they met again for tea. The geologists, under the guidance of Mr. A. G. Davis and Mr. G. F. Elliott, walked along the beach examining the London Clay in the cliffs and foreshore. Many interesting fossils were found including the famous fossil fruits and part of a starfish. The Oxshott Brick Works Co.'s pit in London Clay was visited twice during the year with the object of assisting Miss M. M. Brown to increase the list of species which she is preparing on behalf of the Geological Field Research Committee. Many quite rare fossils have been found during this investigation. In March Mr. R. E. Butler led a meeting to North Mimms and in April Swanscombe was visited with Mr. H. A. Toombs. Mr. C. P. Castell led a party to Tilburstow Hill in May and in June a number of interesting sections and viewpoints in the Chiltern Hills were visited by coach with Mr. P. Evans. In the same month Mr. B. Ainsley led a meeting to Newlands Corner and in July a visit was made to Frome, Somerset, where Dr. Scott Simpson, of Bristol University, showed members the exposures of Carboniferous Limestone in Vallis Vale as well as the spectacular unconformity between Carboniferous and Jurassic rocks. Hand specimens of Carboniferous Limestone bored by Annelids (worms) of Inferior Oolite (Jurassic) age were collected. At a meeting held later in July Mr. J. F. Wyley led a party round extensive workings in Boulder Clay and Gravel south of Hatfield and many interesting erratics and derived fossils were collected, which it is hoped to list and publish at a later date. A joint meeting with the Ruislip Natural History Society was held in May at Harefield, where Mr. S. W. Hester (of the Geological Survey) demonstrated the unconformity between the Chalk (Cretaceous) and Reading Beds (Eocene). In October Mr. A. G. Davis and Mr. J. N. Carreck led a meeting to Downe House, Kent, the home of Charles Darwin.

The recording of temporary geological exposures was continued and a number of reports will be found elsewhere in this volume. The Committee feel that this important work should receive far more support from members generally; at present the area is not adequately covered.

When the Geological Field Research Committee was formed one of its objects was to encourage detailed investigation of selected exposures. The fauna of the London Clay at the pit of the Oxshott Brick Works Co. Ltd. at Oxshott, Surrey, has been the subject of the first of these studies and a Report from Miss M. M. Brown and Mr. C. P. Castell, who are conducting this investigation, will be found on page 61.

The thanks of the Section are again offered to those geologists who so willingly conducted field meetings or rendered other assistance and to the owners of quarries and works for permitting the Society to visit their properties.

C. P. CASTELL, *Chairman.* B. AINSLEY, *Secretary.*

Ornithological Section.

Membership of the Section has continued to increase during the past year and has now reached a total of 950. We record with regret the death of Mr. A. Holte MacPherson.

Nine indoor meetings, including two general meetings, were held during the period, commencing with a lecture on "The Learning Ability of Birds" by Dr. W. H. Thorpe. Mr. R. E. Moreau spoke on "The Palearctic Migration System with Special Reference to Africa" followed, in January, by a programme of colour-films by Mr. R. A. Bagnell-Oakley entitled "Away from the Nest". At a joint meeting with the British Trust for Ornithology the past history and breeding biology respectively of the Black Redstart were discussed by Messrs. R. S. R. Fitter and N. J. P. Wadley. This meeting was concluded with a buffet supper. "The Identification of Warblers" formed the subject of an illustrated address by Mr. G. R. Mountfort and in May there were two short papers by members—Mr. G. E. Manser speaking on "The Dungeness Bird Observatory" and Dr. G. Beven describing "A Visit to Andorra". No indoor meetings were held in June, July and August but in September Mr. J. Lockie came to speak about "The Feeding Ecology of the Rook and Jackdaw". A second programme of films, in black-and-white and colour, was supported by an interesting commentary by Mr. G. Edwards of the R.S.P.B. Film Unit. The year's programme came to an end with the Section's Annual General Meeting, with which was combined discussion on the work of the Section.

This year, Mr. P. W. E. Currie succeeded Mr. H. Greenfield as Chairman. Messrs. E. R. Parrinder and S. Cramp retired from the Committee in accordance with the rules and were succeeded by Messrs. H. Greenfield and K. P. Keywood. Indifferent health having forced Mr. J. F. Burton to resign as Recorder for South of the Thames, these duties were taken over by Mr. H. P. Medhurst. Soon after she agreed to take over the task of Librarian, Miss P. Whiddington left for Canada and her place has been taken by Miss L. B. Langham. Mr. Leslie Baker, having given untiring service as Secretary for a number of years, retired from office this year and has been succeeded by Mr. A. V. Pettit.

Forty-five field meetings were organised for the year, one of which was cancelled owing to fog. Outings to coastal areas continued to be popular, demand always exceeding the accommodation available. In addition, visits to the Thames marshes, reservoirs, gravel-pits, heathland and chalk downs were well supported. A crossing of the Channel by boat from Gravesend was an innovation which deserved better support; although the starting time was inconvenient for many, this experiment is certainly worthy of development. Of the 148 species

observed on these field meetings, Marsh and Hen Harriers, Barn Owl, Avocet, Little Ringed Plover, Black Tern, Little Gull, Gannet, Arctic and Great Skuas and Canada Geese were among the less usual birds encountered. The average attendance was 19.

The number of members receiving journals through the Reading Circles shows little change. *British Birds*, *The Scottish Naturalist*, *Auk*, *Bird Banding* and *Ibis* circulate among a total of 132 members.

Seven new titles have been added to the Library, which continues to be well used by members. No skins were added to the Collection, but two eggs of the Shetland Starling were presented, as well as a photograph of a Bewick's Swan, taken at Richmond Park.

Although somewhat fewer ringing schedules were returned during the year the number of birds ringed—2,417—is the highest total ever achieved by the Society, excluding the three years when the totals were boosted by the Starling Enquiry. Many ringers visited the Dungeness Bird Observatory which is proving very valuable as a training ground for future ringers. A full statement of the ringing results will be found in *The London Bird Report*.

The Section has continued to publish the Quarterly Bulletin. Work on *The Birds of the London Area, 1900-1950*, continues to make good progress. The Field List Cards, originally published by the Society, have now been taken over, by mutual arrangement, by the British Trust for Ornithology. Species are now listed in the Wetmore order, while nomenclature is that adopted by the Editors of *British Birds*. Supplies of these cards are on sale at all indoor meetings.

The Enquiry into the bird population of gravel pits in the London Area has been completed and a full report has been published in *The London Bird Report*. The check on gull roosts in the London Area, commenced in the winter of 1952-53 is continuing, as is the winter census of duck.

P. W. E. CURRIE, *Chairman*. A. V. PETTIT, *Secretary*.

Ramblers' Section.

Membership has increased to 100.

Personnel. Mr. Eades succeeded Mr. Spooner as Chairman. We should like to record that Mr. Spooner has been a most ardent supporter of the Section, rarely failing to attend any meeting or excursion. We should also like to thank Mr. Hodgson for his valuable services as secretary. This office has now been divided between Miss Davis and Miss Franks.

The Year's Programme provided for one General, four Sectional and fourteen field meetings.

The General meeting in April was held in the large hall at Keppel Street when Miss Tousey showed a colour film of American birds—"Audubon's America". Miss Tousey herself gave the song or call notes of each bird as it appeared on the screen.

At the first Sectional meeting in March Mr. R. Fitzgerald showed excellent slides and illustrations—"Talking on Aquaria". In June

"Fieldfare" of *The Evening News* spoke on "Mediaeval Tracks". Large photographs were exhibited on this occasion. In July Miss Rosa Davis gave personal experiences of "A Brief Tour Round the World", illustrating her talk by slides and cine films in colour of her own making. In October Mrs. K. Morford spoke on Ceylon, showing pictures of the country.

During the year visits were made to the British Museum, Apsley House, Addington and Shirley, Penshurst Place, Bayford district, Reigate-Boxhill, Guildford district, Canal trip on the Jason, Burnham Beeches, Hoddesdon, Ightham Moat, the Telephone Trunk Exchange at Faraday Buildings, St. Mary Woolnoth and the Mansion House, and the Sorting Office at Mount Pleasant.

Reading-Circle. We now have two copies of *The Countryman* in circulation. The Commons, Open Spaces and Footpaths Preservation Handbook has been circulated to members of the Reading-Circle in the usual way.

Library. There have been a few additions to the map library purchased out of proceeds from the Reading-Circle.

The Committee records its thanks to lecturers and organisers of excursions.

T. L. EADES, *Chairman*. R. DAVIS and H. FRANKS, *Secretaries*.

**STATEMENT OF ACCOUNTS
GENERAL**

1952	<i>Receipts</i>	
£843 3 0 Subscriptions—Current	£964 0 6
40 15 6 Arrears	30 6 0
13 3 6 In advance	11 12 6
32 5 0 Entrance fees	18 17 6
<hr/>		
£929 7 0		£1024 16 6
19 19 6 Interest on Post Office Account	16 7 9
2 12 6 Interest on £75 War 3½% Stock	2 12 6
Interest on £180 Savings 3% Stock 60/70	5 8 0
3 5 4 Donations	6 2 0
30 6 7 Transfer from Botanical Records Account	— — —
<hr/>		
£985 10 11		£1055 6 9
6 18 1 Balance at 31st October 1952	50 2 6
<hr/>		
£992 9 0		£1105 9 3
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PUBLICATIONS

1952	<i>Receipts</i>	
£98 12 10 Sales of Publications	£68 15 2
— — — Advertisements—London Naturalist	2 2 0
8 7 0 Advertisements—London Bird Report	13 12 0
27 12 0 Donations	— — —
— — — Grants—Royal Society	75 0 0
24 11 0 Sales of Christmas Cards	27 4 0
377 1 0 Balance to General Account	493 14 5
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£536 3 10		£680 7 7
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LEGACIES

Balance, 31st October 1952	£43 7 6
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LIFE COMPOSITION

Balance, 31st October 1952	£325 0 0
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RESERVE

Balance, 31st October 1952	£125 0 0
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Audited and found correct.
12th February 1954.

R. E. BUTLER, Hon. Auditor.
E. B. BANGERTER, Hon. Auditor.

YEAR ENDED 31st OCTOBER 1953.**ACCOUNT.**

1952	<i>Payments</i>	
£134 7 0	Rent ... ... ... ... ... ...	... ... £167 6 6
93 14 7	Programme Expenses (Printing and Postages) ...	... 108 7 6
53 10 0	Printing and Stationery ... ...	... 43 17 6
30 15 0	Postages—Secretary and Treasurer ...	... 34 1 6
2 18 6	Insurance ... ...	... 2 18 6
2 0 0	Gratuities ... ...	... 3 0 0
9 7 0	Subscriptions to Affiliated Societies ...	... 9 12 0
56 12 11	Sectional Expenses ...	... 56 17 6
3 0 0	Chingford Branch Expenses ...	... 2 0 0
9 10 0	South West Middlesex Group Grant ...	... 10 0 0
1 5 0	Grant—"Birds of London Area" ...	... 2 5 9
91 0 0	Secretary's Honorarium and Clerical Assistance ...	... 91 0 0
13 0 0	Library Expenses ...	... 11 15 0
— — —	Nature Conservation Committee Grant ...	... 2 0 0
2 16 6	Library List ...	— — —
14 9 0	Sundry Expenses ...	... 1 18 0
377 1 0	Publications Account ...	... 493 14 5
£892 6 6		£1040 14 2
50 0 0	Transfer to Reserve Account — — —
£942 6 6		£1040 14 2
50 2 6	Balance, 31st October 1953 ...	... 64 15 1
£992 9 0		£1105 9 3

ACCOUNT.

1952	<i>Payments</i>	
£378 13 0	Printing and Postages— <i>London Naturalist</i> ...	... £430 0 0
150 19 7	<i>London Bird Report</i> ...	... 241 18 5
6 11 3	Christmas Cards 8 9 2
£536 3 10		£680 7 7

ACCOUNT.

Balance, 31st October 1953 £43 7 6
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ACCOUNT.

Balance, 31st October 1953 £325 0 0
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ACCOUNT.

Balance, 31st October 1953 £125 0 0
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L. PARMENTER, Hon. Treasurer:

Additions to List of Members

(From April 28th, 1953, to March 23rd, 1954.)

(H denotes membership of the South-West Middlesex Group.)

Members:

1954 Aitken, Miss A., The Royal Hospital, Richmond, Surrey. (Geol.)
 1953 Alsop, G. R. B., 3 St. Mary's Road, Wimbledon, S.W.19. (Orn.)
 1953 Anderson, A. B., 30 Kynance Mews, S.W.7. (Bot., Geol., Orn.)
 1954 Badcock, F., 1 Caversham Flats, Tite Street, Chelsea, S.W.3. (Orn.)
 1954 Baldwin, Miss B. H., 110 Denbigh Street, S.W.1. (Arch., R.)
 1954 Barber, E. C., 40 Allestree Road, S.W.6. (Orn.)
 1953 Barford, Mrs. M., 28 Addison Road, Walthamstow, E.17.
 1953 Bell, William M., 23 Addison Road, Kensington, W.14. (Bot., Mycol.)
 1954 Bentham, Sir (Arthur) Paul, K.B.E., F.L.S., Grey Timbers, Limpsfield, Surrey. (Bot.)
 1954 Bernstein, Miss R., 124 Stoke Newington Road, N.16. (Ecol.)
 1954 Bilham, Mrs. M. G., 44 West Cromwell Road, S.W.5. (Bot.)
 1953 Bishop, R. J., 29 Kingswood Avenue, Shortlands, Bromley, Kent. (Orn.)
 1954 Brenner, Miss Letty, 17 Hall Place Gardens, St Albans, Herts. (Orn.)
 1954 Brown, W. H., 8 Grimswade Crescent, Nunhead, S.E.15. (Orn.)
 1954 Bruce, A. M., 118 Deans Lane, Edgware, Middx. (Bot.)
 1954 Camplin, H. B., 21 Newstead Avenue, Orpington, Kent. (Orn.)
 1954 Carver, R. S., 26 Twyford Road, West Harrow, Middx. (Orn.)
 1954 Cashmore, R. H. W., 17 Sylverdale Road, West Croydon, Surrey. (Bot., Orn.)
 1954 Chagrin, Mrs. E. E., Garden Flat, 6 Lancaster Drive, N.W.3. (Arch., Geol.)
 1954 Cranfeld, Miss D. G., 45 Lansdowne Road, W.11. (Bot., Orn.)
 1954 Cridland, A., 157 Keir Hardie House, Hazellville Road, N.19. (Bot., Ecol., Orn.)
 H 1954 Croydon, Miss E., "Carmscott", The Avenue, Hampton, Middx. (Bot.)
 1954 Cunningham, J. M., c/o The Bank of New Zealand, 1 Queen Victoria Street, E.C.4.
 1954 Daneman, Miss (address not known). (Arch., Geol., Orn.)
 1953 Dawe, E. L., 32 Denton Road, Edmonton, N.18. (Orn.)
 1954 Dennis, D. J., 42 Manor View, Finchley, N.3. (Orn.)
 1954 Doughty, K. F. W., 113 Fishponds Road, S.W.17. (Orn.)
 1954 Driscoll, C. J., 177 Kingsbridge Road, Morden, Surrey. (Orn.)
 1954 Eagles, Thomas R., F.R.E.S., 32 Abbey Road, Enfield, Middx. (Bot., Ent., Orn.)
 1954 Eastwood, J. M., "Rosslyn", Duke's Avenue, North Harrow, Middx. (Geol.)
 H 1954 Eccleston, B. L., 19 Morland Gardens, Southall, Middx. (Arch., Ecol., Geol.)
 1953 England, Miss M. J., c/o 31 Solna Road, Winchmore Hill, N.21. (Orn., R.)
 1953 Eustace, W. S. H., 3 Glenwood Road, Catford, S.E.6. (Arch.)
 1954 Forbes, Mrs. W. M. le Fleming, 57 Philbeach Gardens, S.W.5. (Ent., esp. Lep.)
 1954 Free, Miss A. A., 56 Carlton Avenue, East Wembley, Middx. (Arch., Orn.)
 1954 Gault, Miss R. E., Superintendent's Lodge, Greenwich Park, S.E.10. (Bot., Ent., Geol., Orn.)
 1953 Gill, K. M., 7 West Heath Avenue, N.W.11. (Orn.)
 1937 Gillingham, D. W., 28 Roding Road, Loughton, Essex (omitted from last published list).
 1954 Goulding, R. V., Crawford Street, St. Marylebone, W.1. (Ent., Geol.)
 1953 Green, Dr. A. M., 87 Valleyfield Road, Streatham, S.W.16. (Bot., Orn.)
 1954 Grover, Miss P. M., 88 Holbein House, S.W.1.
 1954 Hale, Victor, 65 Bolingbroke Road, W.14. (Geol.)
 1954 Hancock, V. F., 7 Graenesdyke Avenue, East Sheen, S.W.14. (Orn., Bot.)
 1954 Hanson, S. M., 167 Gunnersbury Park, Ealing, W.5. (Ent., esp. Lep. and Dipt.)
 1954 Hardwick, J. L. M., 26 Ormonde Court, Putney, S.W.15. (Orn.)

1954 Harris, G. J., 33 Wickham Court Road, West Wickham, Kent. (Orn.)
 1954 Hartley, Miss Ada, 1 Wynchgate, Southgate, N.14. (Orn., R.)
H 1954 Hobbs, J. C., 50 Broad Walk, Heston, Hounslow, Middx.
 1954 Holway, P. H., 52 Clarendon Rise, Lewisham, S.E.13. (Freshwater Biology, Bot., Ecol., Ent.)
 1954 Hughes, P. C., 6 Syer's Lane, Whittlesey, Cambs. (Orn.)
 1954 Hussell, D. J. T., 25 Attimore Road, Welwyn Garden City, Herts. (Orn.)
 1954 Idle, A. E., 67 Murray Avenue, Bromley, Kent. (Geol.)
 1954 Jackson, Miss R., 156 Lyndhurst Drive, Hornchurch, Essex.
 1954 Jobson, G. J., The Pantiles, Mill Street, Westleton, Saxmundham, Suffolk. (Orn.)
 1954 Joll, D. E. L., 32 Ashley Gardens, S.W.1. (Orn.)
 1954 Keith, Stuart, 16 Moore Street, Chelsea, S.W.3.
 1953 Leighton, Mrs. E., 6 Old Park Avenue, S.W.12. (Orn.)
 1954 Le Masurier, P. C., 85 Warren Drive, Tolworth, Surrey. (Macrolep.)
 1954 Lewis, R. S., F.R.C.S., 88 Maida Vale, W.9. (Orn.)
 1953 Lloyd, Miss B. O., 96 Queen's Gate, S.W.7. (Orn.)
 1954 Lowe, P. Bruce, M.B.E., T.D., 28 Palace Road, East Molesey, Surrey. (Ecol., Orn.)
 1954 McAllister, D. M., c/o 60 Deodar Road, Putney, S.W.15. (Orn.)
H 1954 Mackett, H. J., 489b Great West Road, Hounslow, Middx. (Orn.)
 1953 Madgwick, A. G. A., "Farmfield", Horton Lane, Epsom, Surrey. (Orn.)
 1953 May, Miss D. V., 24 Castellain Road, Maida Vale, W.9. (Orn.)
 1954 Mannerling, A. R., 42 Brycedale Crescent, Southgate, N.14. (Orn.)
 1954 Morgan, G. H., 1 Felstead Road, Waltham Cross, Herts. (Bot.)
 1953 Moore, Mrs. E. I., 119 Butler Road, Harrow, Middx. (Bot., Orn., R.)
 1954 Mound, L. A., St. Mary's Vicarage, Dartmouth Park Road, N.W.5. (Ecol.)
 1954 Offord, D. R., 6 Drysdale Flats, Dunn Street, E.8.
 1954 Ogilvy, Walter, 11 Chelsea Embankment, S.W.3., and Brooks's, St. James Street, S.W.1. (Zoo.)
 1954 Parker, A. C., 86 Wren Road, Becontree, Essex. (Orn.)
 1954 Paterson, Miss I. S. C., 4 Eltham Park Gardens, S.E.9. (Bot.)
 1954 Perrins, C. M., Thursday Cottage, Ember Lane, Esher, Surrey and Charterhouse School. (Bot., Ent., Orn., Zoo. and tropical fish breeding.)
 1954 Phillips, G. C., 636 Woolwich Road, Charlton, S.E.7. (Orn.)
 1954 Phillips, Miss M. A., 21 Aubert Park, Highbury, N.5. (Ecol., Orn.)
 1953 Plumby, Miss J., 27 Glenloch Road, N.W.3. (Arch., Bot., Geol., Orn., R.)
 1954 Reeves, S. K., 115 Albert Road, Epsom, Surrey. (Orn.)
 1953 Regan, Mrs. C. L., 176 Hammersmith Grove, W.6. (Ecol., Arch., Geol.)
 1954 Richards, P. R., Stowe March, Barnet Lane, Elstree, Herts. (Ent., Orn.)
 1954 Riley, J. J., 92 Tamworth Lane, Mitcham, Surrey. (Ent.)
 1954 Ruffles, Miss V., Esher House, Palace Road, East Molesey, Surrey. (Ecol., Orn.)
 1954 Ryan, Miss I. M. N., "St. John's", 25 Somers Road, Reigate, Surrey. (Bot., Orn.)
 1954 Salmon, M. A., 43 Melbury Court, W.8. (Ent. esp. Homoptera and Auchenorrhyncha.)
 1954 Salmon, P. R., 43 Melbury Court, W.8. (Ent.)
 1954 Sand, Miss M. K., Lindsell Hall, 35 Adamson Road, N.W.3. (Orn.)
 1954 Say, C., 51 Hurstdene Avenue, Hayes, nr. Bromley, Kent. (Arch., Orn.)
 1954 Sellers, A. G., 137 Village Way, Pinner, Middx. (Orn.)
 1954 Side, K. C., 107 London Road, Stone, Dartford, Kent. (Bot., Orn.)
 1953 Silbermann, Miss S. E., 11 Clarges Street, W.1. (c/o Craelius Co. Ltd.). (Bot., Orn.)
 1954 Smith, Miss J. E., 15 Hillside, Wimbledon, S.W.19. (Bot.)
 1953 Stevens, Miss B., 102 Ridge Road, N.21. (Bot., R.)
 1954 Stevenson, Miss L. F., 2 Gordon House Road, Highgate Road, N.W.5. (Ent.)
H 1953 Taylor, F. J. R., 231 Kingston Road, Teddington, Middx. (Ecol.)
 1953 Thomas, E., 4a Blackett Street, Putney, S.W.
H 1954 Thompson, K., 33 Tiverton Road, Hounslow, Middx.
 1953 Tilley, Miss M. J., 42 Huxley Road, Edmonton, N.18. (Orn., R.)
H 1953 Trollope, J., 37 Station Road, Hounslow, Middx. (Orn.)

H 1954 Tydeman, A. E., 173 Rosebery Avenue, E.C.1. (Orn.)
 1954 Verini, Miss E. M., 88 Kensington Park Road, W.11. (Orn.)
 1954 Vesey, C. J., 20 Cissbury Road, Tottenham, N.11. (Bot.)
 1954 Vince, A. A. P., 14 Church Hill, Winchmore Hill, N.21. (Bot., Morph.)
 1953 Walsh, G. F. W., 7 Oakleigh Court, Redhill Estate, Edgware, Middx.
 (Arch.)
 1953 Wattson, Miss C. M., 85 Eton Place, Eton College Road, N.W.3. (Orn.)
 1954 Welch, Mrs. C. B., 68 Brixton Hill Court, S.W.2. (Geol.)
 1954 Wilmot, Miss M., 410 Elm Tree Road Mansions, St. John's Wood, N.W.8.
 (Bot.)
 1954 Wilson, Mrs. J. E., Norfolk Cottage, Virginia Water, Surrey. (Orn., Zoo)
 1954 Woodhead, J. E., 325 Kennington Road, S.E.11. (Bot.)
 1953 Wright, H., 3 Stanstead Grove, Catford, S.E.6. (Arch., Geol.)

Affiliated Societies:

H 1954 Hayes and Harlington Natural History and Antiquarian Society. (Hon. Sec. : G. S. N. Barter, 26 Northfield Park, Hayes, Middx.)
 1954 The Botanical Society, University College Union, Gower Street, W.C.1.

Country Associates:

1954 Hancock, Miss M. F., 42 Vegal Crescent, Englefield Green, Surrey. (Bot.)
 1954 Hewitt, Miss M., "St. Anthony", Church Square, Rye, Sussex. (Orn.)
 1954 Jarrett, W. T., Nizel's Ridge, Hildenborough, Kent.

School Associates:

H 1954 Allcock, J. B., 16 Thornbury Court, Church Road, Isleworth, Middx.
 (Geol., Palaeont.)
 1954 Avery, G. W., 149 Hurst Road, Sidcup, Kent. (Orn.)
 H 1954 Bevan, J., 38 Halsway, Hayes, Middx. (Orn.)
 1953 Child, A. K., 36 Roydene Road, Plumstead, S.E.18. (Orn.)
 1954 Gatley, J. A., 4 Church Road, Highgate, N.6. (Orn.)
 1954 Haddow, W. G. S., c/o Prof. A. Haddow, M.D., D.Sc., Ph.D., The Chester
 Beatty Research Institute, The Royal Cancer Hospital, Fulham Road,
 S.W.3.
 H 1954 Hardy, P. A., 18 Cantley Road, Hanwell, W.7. (Orn.)
 H 1954 Martin, L. P., 14 Boston Gardens, Boston Road, Hanwell, W.7. (Ent.)
 1953 Peel, C., 33 Kingswood Avenue, Bromley, Kent. (Orn.)
 1954 Richards, M. P. M., Coed Menai, Upper Bangor, North Wales. (Bot., Orn.)
 1954 Russell, D. F., "Elmdon", Harriott's Lane, Ashtead, Surrey. (Orn.)
 1953 Savory, R. L., Benges Hall, Hertford, Herts., and Field House, The
 College, Marlborough. (Orn.)
 1954 Shearer, F. B., 37a Cathcart Road, S. Kensington, S.W.10. (Orn.)
 1954 Stacey, J. L., 1 Ashridge Gardens, N.13.
 1954 Stoddard, P. J., 59 Northway, Golder's Green, N.W.11. (Orn.)
 1953 Taylor, D., 11 Meadway, N.W.11. (Orn.)

Branch Associates:

1954 Horsley, Miss E., 16, Colville Road, Lower Edmonton, N.9. (Bot.)

Family Members:

1954 Bird, Miss P., 12 Albany Road, Sutton, Surrey.
 1954 Britten, Harry, M.M., F.R.H.S., 21 Toller's Lane, Old Coulsdon, Surrey.
 (Bot., Ent., esp. Dipt.)
 1954 Campbell, D. E. D., 47 Arkwright Road, Hampstead, N.W.3. (Orn.)
 1954 Chagrin, Julian, Garden Flat, 6 Lancaster Drive, N.W.3. (Arch., Geol.,
 Orn.)
 H 1954 Everitt, Mrs. M. F., 80 Hampton Road, Twickenham, Middx.
 1954 Idle, C. M., 67 Murray Avenue, Bromley, Kent. (Col., Hem., Ent.)
 H 1954 Pierce, John C., 125 Heath Road, Hounslow, Middx. (Bot.)
 1954 Side, Mrs. A. G., 107 London Road, Stone, Dartford, Kent. (Bot., Ecol.)
 1954 Starling, Miss L., 247 Kingston Road, Ewell, Surrey. (Orn.)
 H 1954 Thompson, Mrs. E., 33 Tiverton Road, Hounslow, Middx.
 1954 Ward, Mrs. E. M., 114 Chase Road, Southgate, N.14. (Bot., Ecol., Orn.)

PICRIS L.

P. ECHIOIDES L., HELMINTIA ECHIOIDES (L.) Gaertn. *Bristly Ox-Tongue.* Roadsides, hedgebanks, railway banks, field margins and waste places. Rather common, especially on stiff and calcareous soils. V.-c. 16. Frequent near the tidal Thames. Near Eltham, 1915; *L.J.T.* Near Orpington, 1923; *W.W.* Joyden's Wood, 1937, *P.H.C.*; *Hb.L.N.H.S.* Near Westerham, local, 1924; *R.W.R.* V.-c. 17. Near Chessington, 1922; Mitcham, 1923; Oxted, 1930; *P.H.C.* Buckland Hills; Headley, 1917; *E.B.B.* Streatham Common, 1935; *P.H.C.* Limpsfield, local, 1919; Reigate, 1921; *R.W.R.* Near Betchworth railway station, 1909; *J.E.C.*; 1923; *E.B.B.* Chalky lane near Reigate Heath, 1929; Wallington, 1933, *J.E.L.*; *Hb.L.* Box Hill, 1951-52; Wimbledon Common, 1952; *A.W.J.* V.-c. 18. West Thurrock, 1905; *L.B.H.* Dagenham Dock, 1927; *J.E.C.* Noak Hill; Theydon Bois; *P.H.C.* Hawkwood Lane, 1913, *J.O.B.*; *Hb.L.N.H.S.* V.-c. 19. Galley Wood, 1913, *P.H.C.*; *Hb.L.N.H.S.* Cobbin's End; *P.H.C.* V.-c. 20. Wormley West End, 1908; Cole Green, 1920; *P.H.C.* Little Amwell, 1909, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 21. East Finchley, 1883; Temple Fortune, 1915; Harefield, 1912; Yiewsley, 1921; Finchley, 1927; *J.E.C.* West End, Northolt, 1920; *P.H.C.*; 1950; *D.H.K.* Enfield Lock, 1913; *P.H.C.* Staines; Walton Bridge; Horsendon Hill; Greenford Green; Hanwell, 1939-52; *D.H.K.* Noel Park, 1948; *M.A.R.S.S.*

P. HIERACIOIDES L. *Hawkweed Ox-Tongue.* Grassy places, slopes and waysides. Local, and almost confined to the chalk. V.-c. 16. Northfleet, 1900; *J.E.C.* Plumstead Marshes, 1927; *H.J.B.* Greenhithe, 1930; *R.W.R.* Dartford, 1936; Joyden's Wood, 1937, *P.H.C.*; *Hb.L.N.H.S.* Near Farningham Road railway station; Longfield, 1937, *J.E.L.*; *Hb.L.* V.-c. 17. Merstham, 1905; near Betchworth, 1909 and 1920; *J.E.C.* Buckland Hills, 1917, *E.B.B.*; *Hb.B.* Reigate Hill, 1919; *L.J.T.* Chipstead, 1929; *R.W.R.* Epsom Downs, 1930; *P.H.C.* Above Limpsfield, local, 1921; Oxted, 1922; *R.W.R.* Woldingham, 1929, *J.E.L.*; *Hb.L.* Ham gravel pits, 1942 onwards, abundant; *B.W.* V.-c. 18. Grays, 1925; *J.E.C.* Stifford, 1911, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 21. Harefield, 1913; *J.E.C.*; 1922; *L.J.T.*; 1950; *D.H.K.* Springwell, 1942 and 1947; *D.H.K.* Brompton Cemetery, 1941; *E.W.D.* teste *B.W.* The var. *GRACILIS* (Jord.) Rouy was gathered in v.-c. 16. Keston, 1938, *S.E.C.*; *Hb.L.N.H.S.*

[P. SPINULOSA Guss. This alien species, very closely allied to P. *HIERACIOIDES*, was reported by C. E. Britton to grow at Longfield, v.-c. 16, but other workers have contended that his material was in fact merely P. *HIERACIOIDES*, and not the Adriatic species—see *J. Bot.*, 74, 354-355 (1936) and *B.E.C. 1935 Rep.*, 178-179 (1936) and *1936 Rep.*, 223 and 404 (1937).]

CREPIS L.

C. BIENNIS L. *Rough Hawk's-beard.* Pastures, waysides, cultivated and waste ground. Local, and almost confined to the chalk. V.-c. 16.

Shoreham, 1933; Hogtrough Hill, near Brasted, abundant, 1943, *J.E.L.*; *Hb.L.* Cudham; W. of Otford; *F.R.* Bexley Heath, 1939, *E.W.D.*; *Hb.W.* det. *A.M.* V.-c. 17. Titsey, 1937; between Merstham and Rockshaw, 1942; Mugswell, 1942; meadow near Hogsmill stream, Ewell, abundant, 1942, *A.E.E.*; *Hb.E.C.M.* Tot Hill, Headley, 1943, *J.E.L.*; *Lond. Nat.*, 24, 10 (1945). Betchworth, 1950; *B.M.C.M.* V.-c. 18. Near Dagenham, 1920; *L.B.H.* Stifford Bridge; *R.W.R.* V.-c. 21. Yiewsley, 1918; *J.E.C.* The var. *RUNCINATA* Koch is reported from v.-c. 21. Chalkpit, Harefield and adjacent fields, very abundant, 1946; *H.W.P.* & *D.H.K.* det. *H.W.P.*; 1947-53; *D.H.K.*

C. NICAEENSIS Balb. *French Hawk's-beard.* Alien. S. Europe. V.-c. 17. Colley Hill, 1933, *J.E.L.*; *Hb.L.*

C. CAPILLARIS (L.) Wallr., *C. VIRENS* L. *Smooth Hawk's-beard.* Grassy places, heaths, roadsides and waste places. Common throughout the area. A very variable species. The var. *AGRESTIS* (Waldst. & Kit.) Schinz & Thell. is probably common.

C. VESICARIA L. ssp. *TARAXACIFOLIA* (Thuill.) Thell., *C. TARAXACIFOLIA* Thuill. *Beaked Hawk's-beard.* Probably alien. Europe. Naturalised by waysides, and on walls, railway banks and waste ground. Abundant throughout the area.

C. SETOSA Haller f. *Bristly Hawk's-beard.* Alien. Europe. V.-c. 17. Mizen's Market Garden, Ewell, 1939, *A.E.E.*; *Hb.E.C.M.*

TOLPIS Adans.

T. BARBATA (L.) Gaertn. Alien. Europe. V.c. 17. Mortlake, 1917; *J.E.C.*

HIERACIUM L.

The Hawkweeds of the British Isles have recently been monographed by H. W. Pugsley (A Prodromus of the British Hieracia, *J. Linn. Soc. (Bot.)*, 54, 1-356, (1948), and the account here given follows his arrangement. It has been thought advisable to mention also the Sections in his work to which our species belong in order to give an indication of their relationship. Many of the gatherings cited were named by Pugsley, and but for his death before the publication of the *Prodromus* many more specimens could have been submitted to him for re-identification. As this could not be done it has been thought advisable to omit many early records which could not be given correct names with confidence.

The Hawkweeds of the London Area deserve considerable further study. These plants mostly thrive on well drained slopes, and the banks of railways and reservoirs suit them well: unfortunately access to such habitats is limited and there are many Hawkweeds which can, for example, be seen from trains, though it has not been possible to collect them. We are indebted to P. D. Sell and C. West, who are making a study of the genus, for kindly naming a number of specimens.

Section VULGATA.

H. PRAECOX Sch.-Bip. Well drained banks and railway cuttings. Locally abundant. V.-c. 16. Over Polhill railway tunnel, 1943; *J.E.L.*; *Hb.L.* Library gardens, Bromley, 1953; *J.B.* V.-c. 17. Sline's Oaks, Warlingham, 1937 and 1942, *J.E.L.*; *Hb.L.* teste *H.W.P.*; still plentiful, 1953; *J.E.L.* Railway bank near Chipstead, 1922, *H.W.P.*; *Hb.L.* Banstead, 1952; *J.B.* teste *P.D.S.* & C.W.* V.-c. 18. Banks of Walthamstow Reservoirs, 1950-53; *J.B.* teste *P.D.S. & C.W.*

[*H. PELLUCIDUM* Laest. This species has not been recorded by our members, but there is an old record from Enfield (v.-c. 21), and the plant is likely to be re-discovered in the area.]

H. EXOTERICUM Jord. Banks, roadsides, and waste ground. Rather local, or overlooked. V.-c. 16. Roadside near Shoreham, 1936; S. of Fairtrough, near Halstead, 1943, *J.E.L.*; *Hb.L.* V.-c. 17. Mickleham; *H.W.P.* Near Chertsey, 1922, *C.E.B.*; *Hb.Kew.* V.-c. 21. Grounds of Natural History Museum, S. Kensington, 1949-53, *E.B.Ba.*; *Hb.Mus.Brit.* teste *P.D.S. & C.W.* Near the Albert Memorial, Kensington Gardens, 1950; *D.H.K.* The var. *SUBLEPISTOIDES* (Zahn) Pugsl. is recorded from v.-c. 16. Shoreham, 1949, *D.McC.*; *Hb.L.* V.-c. 17. Chalky bank, Box Hill railway station, 1944, *J.E.L.*; *Hb.L.* teste *H.W.P.* Bookham; *E.C.W.* teste *H.W.P.* Leatherhead; *H.W.P.* The f. *GRANDIDENS* (Dahlst.) Pugsl. is reported from v.-c. 16. Park Wood, Swanley, 1945; *F.R.B.* teste *P.D.S. & C.W.* V.-c. 17. Pilgrim's Way, Caterham, 1932, *C.E.B.*; *Hb.L.* teste *H.W.P.*

H. VULGATUM Fries agg. Railway banks and tracks. Very local. V.-c. 21. Railway banks and tracks, Uxbridge, abundant, 1953, *T.G.C.*, *M.C. & D.H.K.*; *Hb.K.* det. *P.D.S. & C.W.*

H. LEPIDULUM Stenstr. Well drained banks of reservoirs and railway cuttings. Very local. V.-c. 17. Railway bank, Box Hill railway station, possibly introduced during the Great War, 1922, *H.W.P.*; 1944, *J.E.L.*; *Hb.L.* teste *H.W.P.* V.-c. 18. Banks of Walthamstow Reservoirs, 1950-53; *J.B.* teste *P.D.S. & C.W.* The var. *HAEMATOPHYLLUM* Dahlst. also occurs at Walthamstow.

H. MACULATUM Sm. *Spotted Hawkweed.* In similar situations to the previous species, also by roadsides, and on old walls. Local. V.-c. 17. Reigate; *H.W.P.* Banstead Heath, 1931, *C.E.B.*; in great abundance on roadsides and railway banks near the Joliffe Arms, Merstham, 1943, *J.E.L.*; *Hb.L.* teste *H.W.P.* Betchworth, 1950-52; *J.B.* teste *P.D.S. & C.W.* V.-c. 18. Walthamstow Reservoirs, 1950-53; *J.B.* teste *P.D.S. & C.W.*

H. MEGAPODIUM Dahlst. Very rare. Well drained banks of reservoirs. V.-c. 18. Walthamstow Reservoirs, 1953; *J.B.*, *J.Rat.* *P.D.S. & C.W.*

*Sell, P. D.

†Raven, J.

H. SUBAMPLIFOLIUM (Zahn) Roffey. In similar situations to the preceding species. Very rare. V.-c. 16. Park Wood, Swanley; F.R.B. det. P.D.S. & C.W. V.-c. 18. Walthamstow Reservoirs, 1953; J.B., J.Ra., P.D.S. & C.W.

H. ANGLORUM (Ley) Pugsl. Heathy places. Rare, or overlooked. V.-c. 17. Putney Heath; H.W.P. V.-c. 21. Uxbridge, A.L.; Hb.D. teste H.W.P.

H. LACHENALII C. C. Gmel. Woods, heaths, banks, roadsides and old walls. Rather common. V.-c. 16. Swanley, F.J.H.; Hb.Mus.Brit. V.-c. 17 Mickleham; H.W.P. Sheen Common, 1929, E.M.-R.; Hb.Kew. Leatherhead; railway bank, Box Hill, 1940, P.H.C.; Hb.L.N.H.S. teste H.W.P. Laneside near Headley Heath, 1928, E.C.W.; near Stew Ponds, Ashstead, 1929; Betchworth Lime Pits, 1941; bank by Joliffe Arms, Merstham, 1943; S. end of Banstead Downs, 1944, J.E.L.; Hb.L., all teste H.W.P. V.-c. 18. Roadside bank, Hart's Wood, Warley, 1952, J.E.L.; Hb.L. teste P.D.S. & C.W. Walthamstow Reservoirs, 1950-53; Woodford, 1950-51; J.B. teste P.D.S. & C.W. V.-c. 20. Oxhey Woods, 1946, D.H.K.; Hb.K. teste H.W.P. V.-c. 21. Harrow Weald Common; Pinner Hill; old wall by West Drayton Church, 1946, D.H.K.; Hb.K. teste H.W.P. Near Ealing, 1946; F.P.D.B. & D.H.K. teste H.W.P. Old railway bridge near Fulwell, 1947; Harefield, 1950; D.H.K. Bombed site near Fore Street, E.C., 1950-51; J.B. teste P.D.S. & C.W.

H. TUNBRIDGENSE Pugsl. Heaths, woods and roadsides. Very local, or overlooked. V.-c. 16. Chelsfield-Shoreham road, 1953; F.R.B. teste P.D.S. & C.W. V.-c. 17. Worm's Heath, 1932, C.E.B.; by Fairchildes Road, Worm's Heath, 1943, J.E.L.; Hb.L., both teste H.W.P. V.-c. 21. Hadley Wood, 1950, E.B.Ba., J.K.M. & J.W.; Hb.Mus.Brit. teste P.D.S. & C.W. A plant which appears to be referable to this species occurs at Walthamstow Reservoirs (v.-c. 18), but more material is needed for confirmation; J.B. teste P.D.S. & C.W.

H. STRUMOSUM Ley. Roadside banks. Very rare. V.-c. 17. Roadside bank, Box Hill, 1927, E.C.W.; Hb.L. teste H.W.P.

Section TRIDENTATA

H. TRIDENTATUM Fries. Heaths, woods, banks, roadsides. Rather common. V.-c. 16. Hayes Common, 1951; J.B. teste P.D.S. & C.W. V.-c. 17. Roadside, Byfleet, 1937, J.E.L.; Hb.L. teste H.W.P. Epsom Common, 1949; D.H.K. teste P.D.S. & C.W. Shirley, 1953; F.R.B. teste P.D.S. & C.W. V.-c. 18. Epping Forest, 1951; J.B. teste P.D.S. & C.W. V.-c. 21. Harrow Weald and Stanmore Commons; railway bank, North Acton; Windmill Lane, Southall, abundant; railway banks from near Brentford to Southall in profusion, 1946, D.H.K.; Hb.K., all det. H.W.P. Pinner Hill, 1946; D.H.K. det. H.W.P. Railway banks, West Acton to Ealing Broadway, 1946-53; D.H.K. Hampstead Heath; H.W.P. Highgate, 1945, R.S.R.F.; Hb.L.N.H.S. teste H.W.P. The

var. *POLYPHYLLUM* (Zahn) Pugsl. has been recorded from v.-c. 17. Worm's Heath, 1943, *J.E.L.*; *Hb.L.* teste *H.W.P.* Oxshott; *H.W.P.* V.-c. 21. Brockley Hill, 1946, *D.H.K.*; *Hb.K.* teste *H.W.P.*

H. CANTIANUM F. J. Hanb. Banks and roadsides. Rare, or overlooked. V.-c. 16. Railway bank, Shoreham Lane Bridge, Riverhead, near Sevenoaks, 1953, *F.R.B.* V.-c. 17. Addington and Shirley Hills, 1953; *F.R.B.*, both teste *P.D.S.* & *C.W.*

H. TRICHOCAULON (Dahlst.) Roffey. Banks and roadsides. Rare, or overlooked. V.-c. 24. Roadside banks near Black Park, 1949, *D.H.K.*; *Hb.K.* teste *P.D.S.* & *C.W.*

H. EBORACENSE Pugsl. Wooded roadsides. Rare, or overlooked. V.-c. 17. Addington Hills, 1953; *F.R.B.* teste *P.D.S.* & *C.W.*

Section UMBELLATA

H. UMBELLATUM L. Heaths, woods and banks. Locally plentiful. V.-c. 16. Hayes Common; *H.W.P.*; 1952; *E.B.Ba.* Keston Common, 1952; *D.H.K.* V.-c. 17. Cheam; Raynes Park; Esher; *H.W.P.* Weybridge Heath, 1917, *E.B.B.*; *Hb.B.* Oxshott Heath, 1917; Banks Common, 1923; *E.B.B.* Limpsfield, 1922; *R.W.R.* Worm's Heath, 1935, *E.C.W.*; Ashtead Common, 1928; Wimbledon Common, 1942, *J.E.L.*; *Hb.L.*; 1953; Epsom and Littleworth Commons, 1943; *D.H.K.* Barnes Common, 1952; *J.B.* V.-c. 18. Purfleet, 1936; *P.H.C.* Epping Forest, 1951; *J.B.* V.-c. 21. Harefield, 1912, *P.H.C.*; *Hb.L.N.H.S.*; 1922; *L.J.T.* teste *L.B.H.* Hounslow Heath, 1944, *D.H.K.*; *Hb.K.* conf. *H.W.P.* Railway banks between Hounslow and Feltham, 1945; railway banks, Gunnersbury, 1951; *D.H.K.* The var. *LINARIIFOLIUM* Wallr. is recorded from V.-c. 16. Hayes Common; *H.W.P.* Railway bank, Bromley South; *F.R.B.* teste *P.D.S.* & *C.W.* V.-c. 17. Barnes Common; *H.W.P.*, and the var. *CORONOPIFOLIUM* Bernh. from V.-c. 16. Hayes Common; *H.W.P.* Keston; railway bank, Bromley South; *F.R.B.* teste *P.D.S.* & *C.W.*

Section SABAUDA

Pugsley's treatment of this section is unsatisfactory as applied to the plants of the London Area and the six species given below are in need of revision.

H. BLADONII Pugsl. Woods, copses, heaths and hedgebanks. Common throughout the area, and recorded from all the v.-cc.

H. PERPROPINQUUM (Zahn) Pugsl. In similar situations to the preceding species, from which we are unable to distinguish it. V.-c. 16. Hayes Common, 1953; *F.R.B.* V.-c. 17. Wimbledon Common; *H.W.P.* V.-c. 18. Epping Forest; *H.W.P.*

H. VIRGULTORUM Jord. Woods, banks and roadsides. Locally abundant. V.-c. 20. Lane near Northwood, 1952; *R.A.G.* V.-c. 21. Copse Wood, Northwood, abundant, 1945, *B.W.*; *Hb.K.* det. *H.W.P.*;

1949, *R.A.G.*; *Hb.L.* Near Harefield, 1945, *D.H.K.*; *Hb.K.* det. *H.W.P.*

H. RIGENS Jord. Heaths, banks and grassy places. Local. V.-c. 17. Wimbledon Common; *H.W.P.* Littleworth Common, 1928, *C.E.B.*; *Hb.Kew.* V.-c. 18. Walthamstow Reservoirs, 1951-53; *J.B.* teste *P.D.S. & C.W.* V.-c. 21. Roadside, Hill End, Harefield, 1949; *R.A.G.* Finsbury Park, 1952; *J.B.*, both teste *P.D.S. & C.W.*

H. VAGUM Jord. Banks and grassy places. Local. V.-c. 18. Walthamstow Reservoirs, 1951-53; *J.B.* teste *P.D.S. & C.W.* V.-c. 21. Bombed site, Red Cross Street, E.C., 1949, *J.E.L.*; *Hb.L.* The first *HIERACIUM* to appear in the City. Bombed site, corner of Addle Street and Wood Street, E.C., 1952; *E.M.C.I.* per *J.E.L.* Meadow by railway, Perivale Park, 1953, *T.G.C.*; *Hb.K.* all teste *P.D.S. & C.W.*

H. SUBLACTUCACEUM (Zahn) Druce. Rare, or overlooked. In a garden. V.-c. 21. Garden of the 'Brackens', Nicholas Way, Northwood, 1949; *R.A.G.* teste *P.D.S. & C.W.*

Section PILOSELLINA

H. PILOSELLA L. *Mouse-ear Hawkweed*. Grassy places, pastures, heaths and banks. Common in all the v.-cc. The var. *CONCINNATUM* F. J. Hanb. is reported from v.-c. 17. Ditton; Oxshott; Wimbledon Common; *H.W.P.* V.-c. 21. Ruislip; *H.W.P.* The var. *CONCOLOR* Tausch is recorded from v.-c. 18. Walthamstow Reservoirs, 1953; *J.B.*, *J.Ra.*, *P.D.S. & C.W.*

Section PRATENSINA

H. BRUNNEOCROCEUM Pugsl. Alien. C. Europe. Garden escape. Established on railway banks and grassy roadsides, and naturalised on heaths and in woods. Not common. V.-c. 16. Joyden's Wood, Bexley, 1938, *P.H.C.*; *Hb.L.N.H.S.* det. *D.H.K.* V.-c. 17. Roadside, Ashtead, 1940-45, *P.H.C.*; *Hb.L.N.H.S.* det. *D.H.K.* Wimbledon and Esher Commons; *A.W.J.* V.-c. 21. Grassy roadside, Syon Lane, Osterley, abundant, 1946, *D.H.K.*; *Hb.K.* conf. *H.W.P.* Railway bank, Eastcote, abundant, 1947-53; West Drayton, 1943; roadside near Harrow, one plant, 1942; railway banks between Poyle and Colnbrook, 1951; waste ground, Kenton, 1952; *D.H.K.* Railway bank, Castle Bar, Ealing, 1935-36; *K.E.B.*; abundant, 1951-53; *D.H.K.*

[Section PRAEALTINA

H. SPRAGUEI Pugsl. The only known locality for this species was a road cutting between Chorley Wood and Chalfont Road railway station (v.-c. 24), where it was collected by T. A. Sprague in 1923 and 1925. It is believed to have been last seen just before the recent war, and is in much need of re-discovery. Although a little outside the area it is possible that the air-borne seeds might be carried into the area, and the plant should be looked for about Uxbridge or Denham.]

HYPOCHOERIS L.

H. RADICATA L. *Cat's Ear.* Meadows, pastures and grassy places. Common throughout the area, and recorded from all the v.-cc.

H. GLABRA L. *Smooth Cat's Ear.* Wood borders on sandy soil. Rare. V.-c. 16. Edge of Farningham Wood, 1945; *F.R.*; 1947, *J.E.L.*; *Hb.L.* Grassy places in Joyden's Wood, Bexley, sparingly, 1948; *R.A.B.* V.-c. 17. Reigate Heath, 1946; *B.M.C.M.*

LEONTODON L.

L. HISPIDUS L. *Rough Hawkbit.* Meadows, pastures and grassy places, especially on the chalk. Locally plentiful. V.-cc. 16 and 17. Frequent, especially on calcareous soils. V.-c. 18. South Weald, 1910, *P.H.C.*; *Hb.L.N.H.S.* Walthamstow Reservoirs, 1951; *J. B.* Chigwell; *A.W.J.* V.-cc. 20 and 21. Rather common.

L. AUTUMNALIS L. *Autumnal Hawkbit.* Meadows, pastures, and grassy waste ground. Common in all the v.-cc. Plants with lemon-yellow coloured flowers are reported from v.-c. 21. Muswell Hill, 1895; North Finchley, 1929; *J.E.C.*

L. TARAXACOIDES (Vill.) Mérat, *L. LEYSSERI* G. Beck, *THRINCIA HIRTA* Roth. *Hairy Hawkbit.* Dry grassy places, especially on base-rich soils. Local, or overlooked. V.-c. 17. Oxted Downs, 1922; *R.W.R.* Reigate Heath, 1929 and 1941; Mitcham Common, 1941, *J.E.L.*; *Hb.L.* Putney Vale, 1945; *B.W.* V.-c. 21. Whitchurch Common, 1913, *C.S.N.*; *Hb.L.N.H.S.* North Hill, Highgate; *L.B.H.* Near Ruislip Reservoir, 1945; *B.W.* Ealing and Uxbridge Commons; Bushy Park; Hounslow Heath, 1947-52; *D.H.K.*

TARAXACUM Weber

A very difficult group which has not been seriously studied in the London Area.

T. OFFICINALE Weber agg. *Common Dandelion.* Pastures, meadows, lawns, waysides, waste places, etc. Very common throughout the area.

T. LAEVIGATUM (Willd.) DC. agg. *Lesser Dandelion.* Dry pastures on sandy or calcareous soils, heaths, waste ground and walls. Common in all the v.-cc., except 19, where it is so far unrecorded.

LACTUCA L.

L. VIROSA L. Roadsides and waste places. Locally abundant, especially near the tidal estuary. V.-c. 16. Dartford Marsh, *P.H.C.*; *Hb.L.N.H.S.* Near Northfleet; near Southfleet, 1919; *P.H.C.* Plumstead Marshes, 1896; Crayford, 1910; *J.E.C.*; 1933; *P.H.C.* Abbey Wood, 1927; *R.W.R.* Hayes, 1938; *D.McC.* Near Stone, 1920, *E.B.B.*; *Hb.B.* Woolwich Arsenal; Dartford; Greenhithe; *F.R.* V.-c. 17. Morden, 1937; Langley Bottom, Epsom Downs; Mizen's Market Garden, Ewell, 1939, *A.E.E.*; *Hb.E.C.M.* Ham gravel-pits, 1934; *P.H.C.*

Balham; Epsom Sewage Farm, *A.E.E.*; *B.E.C.* 1938 *Rep.*, 46 (1939). Reigate, 1941; *J.B.* V.-c. 18. Near Purfleet, 1911, *P.H.C.*; *Hb.L.N.H.S.* Grays, 1908; Bulphan, 1909; *P.H.C.* Chingford; Hale End; *J.O.B.* Near Stifford; *R.W.R.* West Thurrock, 1925; Dagenham Dock, 1927; *J.E.C.* Stapleford Tawney; Loughton, rare; *R.M.P.* Walthamstow Reservoirs, 1951; *J.B.* V.-c. 19. Galley Wood, 1909; *P.H.C.* V.-c. 20. Springwell; Rickmansworth; *D.H.K.* V.-c. 21. Yiewsley, 1908-13; Harefield, 1913; *J.E.C.*; 1953; *D.H.K.* Alexandra Palace, 1910; *J.E.C.* Hayes, 1909; *P.H.C.* West Drayton, 1910, *P.H.C.*; *Hb.L.N.H.S.*; 1953; *D.H.K.* South Mimms; *C.S.N.*; 1952; *D.H.K.* Ickenham, 1924; *H.J.B.* Ruislip; Yeading; Greenford; Hanwell; Horsendon Hill; Yeoveney; Poyle; Potters Bar, 1939-53; *D.H.K.* Gravel pits, East Bedfont, 1945; *J.E.L.* Springwell, 1942, *D.H.K.*; *Hb.K.* V.-c. 24. Iver, 1909; *P.H.C.* The var. *INTEGRIFOLIA* S. F. Gray is recorded from v.-c. 21. Springwell; Poyle; *D.H.K.*

L. SERRIOLA L., *L. SCARIOLA* L. *Prickly Lettuce*. Waste ground near the tidal estuary. Locally abundant. V.-c. 16. Sea-wall near Stone, 1920, *E.B.B.*; *Hb.B.* Sea-wall, Littlebrook Marshes, in great quantity, 1930; *R.W.R.* Dartford Marshes; *P.H.C.* V.-c. 18. Purfleet, 1911, *C.S.N.*; *Hb.L.N.H.S.*; 1935; *P.H.C.* Var. *DUBIA* (Jord.) Rouy. This is the aggressive entire-leaved form, possibly of adventive origin, which has spread so rapidly in the London Area in recent years. Plants with runcinate leaves occur occasionally. It has been recorded from all the v.-cc., and is frequent on waste ground, rubbish-tips, bombed sites and roadsides throughout the area.

L. SALIGNA L. *Least Lettuce*. Waste ground near the tidal estuary. Very local. V.-c. 16. Plumstead Marshes, c. 1885, *F.J.H.*; *Hb.Mus.Brit.* Sea-wall, Littlebrook Marshes, mixed with *L. SERRIOLA* but much less plentiful, 1930, *R.W.R.*; *Hb.R.* [Occurs in quantity on sea-walls beyond Gravesend, just outside the area.] V.-c. 18. Purfleet, 1911, *L.B.H.*; *Hb.L.N.H.S.*; 1920; *L.B.H.*

L. SATIVA L. *Garden Lettuce*. Alien. S.W. Asia? Occurs on rubbish-tips and waste ground as an outcast from cultivation.

MYCELIS Cass.

M. MURALIS (L.) Reichb., *LACTUCA MURALIS* (L.) Gaertn. *Wall Lettuce*. Walls, dry banks, woods and shady places, especially on light soils. Locally common. V.-c. 16. Keston, 1917; *P.H.C.* Greenhithe, 1938, *P.H.C.*; *Hb.L.N.H.S.* N.E. of Otford, 1922; *L.J.T.* Otford; *A.W.J.* Shoreham, 1924; *E.B.B.* Near Brasted, 1935; *M.M.W.* Darenth Wood, 1948-49; *H.M.P.* V.-c. 17. Near Purley, 1899; *L.B.H.* Headley Lane, Mickleham; Fetcham Park; *E.B.B.* Reigate Hill, 1919; *L.J.T.* Lane from Titsey to Tatsfield, 1929; *J.C.R.* Wood S.E. of Marden Park, 1924; *L.J.T.* Woldingham; *P.H.C.* Woodhurst Park, near Oxted, local, 1917; *R.W.R.* Box Hill, 1937-53; *D.H.K.* Banstead, 1941; *J.B.* Wall between Sheen Common and Richmond Park, 1942-52; *B.W.* V.-c. 18. Lambourne, not uncommon in parts of Hainault Forest,

1905; *R.W.R.* Near Epping, 1910, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 19. Epping Lower Forest, 1909, *R.W.R.*; *Hb.L.N.H.S.* Cobbin's End; *P.H.C.* V.-c. 20. Rickmansworth, 1900; *C.S.N.* V.-c. 21. Harefield; *P.H.C.*; 1953; *D.H.K.* Between Pinner and Eastcote; *C.S.N.* Moss Lane, Pinner; Pinner Hill, 1946; Springwell; Highgate Wood, very scarce, 1947; Regents Park, very scarce, 1951; *D.H.K.* Stanmore Grove, 1908; *C.B.G.* North West Heath, Hampstead, 1947; *H.C.H.*; 1953; *D.H.K.* V.-c. 24. Dry Banks near West Hyde, 1906, *C.S.N.*; *Hb.L.N.H.S.* Denham; *P.H.C.*

CICERBITA Wallr.

C. MACROPHYLLA (Willd.) Wallr., *LACTUCA MACROPHYLLA* (Willd.) A. Gray. Alien. Caucasus. Established on banks and in grassy waste places. Rare. V.-c. 16. Ruxley gravel pit, near Sidcup, 1953; *J.F.H.** det. *J.E.L.* V.-c. 17. Rough ground by Stepping Stones, below Box Hill, 1948, *J.E.L.*; *Hb.L.* Church Lane, Chaldon, established, 1949-51; *H.Br.* Foot of Colley Hill; *B.W.* V.-c. 21. Temple Fortune, 1924-27, *J.E.C.*; *Hb.Mus.Brit.* Railway side near Paddington, 1952; *R.S.R.F.* Railway bank, Ealing, c. 1943; *L.M.P.S.*

SONCHUS L.

S. PALUSTRIS L. *Marsh Sow-Thistle.* Marshes and reed-beds by the tidal estuary. Very rare, and probably extinct. V.-c. 16. Near the Butts, Plumstead Marshes, 1883; Great reed-bed, Plumstead Marshes, 1885, *F.J.H.*; *Hb.Mus.Brit.* V.-c. 18. North Woolwich, 1871, *F.J.H.*; *Hb.Mus.Brit.*

S. ARVENSIS L. *Field Milk-Thistle, Corn Sow-Thistle.* Streamsides, marshes, banks, cultivated and waste ground. Very common in all the v.-cc. The var. *LAEVIPES* Koch is reported from v.-c. 17. Epsom Common, 1941, *J.E.L.*; *Hb.L.*

S. ASPER (L.) Hill. *Spiny Milk- or Sow-Thistle.* Cultivated and waste ground. Common throughout the area, though less so than the next species. The var. *INTEGRIFOLIUS* Lej. is reported from v.-c. 17. Epsom Downs, 1925, *J.E.L.*; *Hb.L.*

S. OLERACEUS L. *Milk- or Sow-Thistle.* Cultivated and waste ground, waysides, etc. Common in all the v.-cc. The hybrid with *S. ASPER* should be looked for.

TRAGOPOGON L.

T. PORRIFOLIUS L. *Salsify.* Alien. Mediterranean region. Escape from cultivation. Naturalised in grassy waste places, especially near the tidal estuary. Locally plentiful. V.-c. 16. Stone Marshes, one plant, 1937; *P.H.C.* River-wall below Erith, and at Stone; *F.R.* V.-c. 17. Field near Eastfields, Mitcham, 1927, *J.E.L.*; *Hb.L.* In 1927-28 the plant was frequent in the Eastfields area where it was formerly

*Holroyde, J. F.

grown as a crop. V.-c. 18. Thurrock Marshes, 1935, *P.H.C.*; *Hb.L.N.H.S.* Grays, *P.H.C.*; *B.E.C.* 1935 Rep., 33 (1936). Purfleet, 1936-38; *P.H.C.* About Tilbury, 1938, *J.E.L.*; *Hb.L.* V.-c. 20. Roadside at Hailey, 1952; *L.N.H.S.* Excursion. V.-c. 21. South Harrow, 1940-44; West Drayton, 1949; *D.H.K.* By Arnos Grove tube station, 1944-53; New Southgate, 1946; *M.A.R.S.S.*

T. PRATENSIS L. *Goat's-Beard, Jack-go-to-bed-at-noon.* Alien? Grassy waste places and roadsides. Not common. V.-c. 16. Crayford, 1933; *P.H.C.* Kidbrooke Camp, 1943, *J.A.W.*; *Hb.L.* V.-c. 17. Colley Hill, Reigate, 1917; *E.B.B.* fide *C.E.S.* Waste ground adjacent to South Croydon railway station, in considerable quantity, no *T. MINOR* seen 1926, *E.B.B.*; *Hb.B.* Epsom College, 1942, *J.McL.**; *Hb.E.C.M.* V.-c. 21. Near Northwood; railway bank, North Acton, 1949; *D.H.K.*

T. MINOR Mill. *Goat's-Beard, Jack-go-to-bed-at-noon.* Meadows, pastures, banks, grassy waste places and roadsides. Common throughout the area and recorded from all the v.-cc.

LOBELIACEAE

LOBELIA L.

L. ERINUS L. Alien. S. Africa. Garden outcast. V.-c. 17. Limpsfield Common, *R.W.R.*; *Lond. Nat.*, 19, 25 (1940). V.-c. 21. Gravel-pit, Hillingdon, 1936, *P.H.C.*; *Hb.L.N.H.S.*

CAMPANULACEAE

JASIONE L.

J. MONTANA L. *Sheep's-bit.* Grassy places on sandy or gravelly soils. Local and rare. V.-c. 16. By Bromley South railway station, 1946; *F.R.* V.-c. 17. Between Weybridge and New Haw, 1917; *E.B.B.*; 1943; sandy bank near Weybridge railway station, 1940, *P.H.C.*; *Hb.L.N.H.S.* Sandpit, Limpsfield Common, 1917; *R.W.R.* Walton Common, plentiful over a small area, 1953; *R.A.B.* V.-c. 18. Open copse near Romford, 1913, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 20. Gravel-pit, Essex Road, Hoddesdon, 1910, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 21. Between Harefield and Rickmansworth, 1912, *P.H.C.*; *Hb.L.N.H.S.* Hounslow Heath, c. 1935, not seen since; *D.H.K.*

WAHLENBERGIA Schrad.

W. HEDERACEA (L.) Reichb., **CAMPANULA HEDERACEA** L. *Ivy-leaved Bellflower.* Damp open heathy woodlands. Very rare. V.-c. 18. Epping Forest near Loughton, 1882, *J.O.B.*; *Hb.L.N.H.S.* Near Wake Arms; *L.B.H.* Epping Forest between Theydon and Loughton, *R.W.R.*; *L.N.H.S.* 1915 *Trans.*, 47 (1916). Last seen in Epping Forest about 1920, and believed to be extinct there; *J.R.* Epping Forest near High Beach, 1946 or 1947; *Mr. Dadd* per *F.R.*

*McLuskie, J.

PHYTEUMA L.

P. TENERUM ssp. *ANGLICUM* R. Schulz, *P. ORBICULARE* auct. angl., non L. *Round-headed Rampion*. Confined to v.-c. 17, where it is locally plentiful on grassy places on the chalk. V.-c. 17. Chalky bank near Caterham, 1883, *F.J.H.*; *Hb.Mus.Brit.* Chipstead, 1901, *L.B.H.*; *Hb.H.*; 1929; *R.W.R.*; 1949-1953; *B.W.* Near Worm's Heath, rare, 1919; railway bank near Sanderstead, 1917; *R.W.R.*; 1951; *R.M.P.* Farthing Downs, Coulsdon, 1914; *J.E.C.*; 1920; Waddington, S. of Kenley; *W.W.* Headley Heath, 1919; *E.B.B.* Fetcham Downs, 1926, *E.C.W.*; Walton Downs, 1942; Epsom Downs, 1926, *J.E.L.*; *Hb.L.*; 1944; *P.H.C.*; 1951; *J.B.* Tyrell's Wood Golf Course, 1951; *J.E.S.D.*

CAMPANULA L.

C. GLOMERATA L. *Clustered Bellflower*. Grassy places mainly on the chalk, but also occurring on the alluvial soils of the higher parts of the Thames. Locally frequent. V.-c. 16. Apparently rare, and recorded only from Westerham, 1913, *L.B.H.*; *Hb.H.* V.-c. 17. Locally plentiful on the chalk. In the upper Thames region recorded from roadside near Thorpe, 1917; *E.B.B.* Near Weybridge, 1922; *W.W.* V.-c. 21. Completely absent from the chalk, and known only from a few stations near the Thames above Chertsey Bridge. Field near Staines, 1872, *F.J.H.*; *Hb.Mus.Brit.* Laleham, 1941, *P.H.C.*; *Hb.L.N.H.S.*; 1946; meadow near Penton Hook Lock, 1947; railway banks near Colnbrook, 1951; *D.H.K.* V.-c. 24. Wraysbury, 1912, *P.H.C.*; *Hb.L.N.H.S.* The var. *VULGATA* f. *LONGIFOLIA* G. Beck is recorded from v.-c. 17. Titsey, 1935, *C.E.B.*; *Hb.L.*

C. LATIFOLIA L. *Giant Bellflower, Throatwort*. Woods and hedge-banks. Very rare. V.-c. 20. Small copse near North Mimms, several fine plants, 1909; *P.H.C.* Chorley Wood, 1910, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 21. Mimmshall Wood, 1909, *C.B.G.*; 1910, *P.H.C.*; *Hb.L.N.H.S.*

C. TRACHELIUM L. *Nettle-leaved Bellflower*. Woods and hedge-banks, particularly on calcareous and clay soils. Locally plentiful. V.-c. 16. Common. V.-c. 17. Frequent. V.-c. 20. Garrett Wood, Springwell, 1947; *D.H.K.* V.-c. 21. Woods near Ruislip Reservoir; *C.B.G.* Horsendon Hill, casual, c. 1935; Old Park Wood, Harefield, 1939; Garrett Wood, Springwell, 1942-53; *D.H.K.* Ken Wood, 1945; *R.S.R.F.*

C. RAPUNCULOIDES L. *Creeping Bellflower*. Alien. Europe. Garden escape. Established in grassy waste places, by roadsides, and on railway banks, and naturalised on heaths and commons, and in woods. Rather common, and still spreading. V.-c. 16. Wilmington, abundant in gardens as a noxious weed, 1937, *M.C.F.S.**; *Hb.L.* Hayes Old Rectory, garden weed, 1938; Sevenoaks, rubbish-tip, 1951; *D.McC.* Roadside, Green Street Green, 1948; Dartford Heath, 1950; *H.M.P.* Shoreham, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 17. Epsom, 1933; *P.H.C.* Banstead

*Shepherd, Mrs. M. C. F.

Downs, 1927, *E.C.W.*; *Hb.L.* Tandridge, 1928, *R.W.R.*; *Hb.R.* Wimbledon Common, 1943; *C.A.*; 1952; *A.W.J.* Epsom College, well established, 1931, *I.B.B.*; *Hb.E.C.M.* The Oaks, Carshalton; *A.E.E.* Kew Gardens, weed in shrubberies, 1944; *D.H.K.* Ham Gravel Pits, 1945-50; railway bank near Richmond, 1950; *B.W.* Roadside between Hampton Court and Esher; roadside near Claremont, 1948; *R.A.B.* Reigate Heath, 1950-51; *B.M.C.M.* Railway bank just N. of Oxted station, a large patch, 1951; *K.E.B.* V.-c. 18. Walthamstow Reservoirs, 1950-51; *J.B.* V.-c. 21. Hampton Court, in several places, 1944; *B.W.*; 1948, Hartington Road, Chiswick, a small patch, 1949; *R.A.B.* Well Walk, Hampstead, a small patch, 1948; *H.C.H.* Near Hanger Hill, Ealing, garden weed, 1946; *F.P.D.B.* & *D.H.K.* Waste ground, Brent Reservoir, 1952; *R.A.G.* & *D.H.K.*

C. ROTUNDIFOLIA L. *Harebell.* Heaths, commons and dry grassy places. Frequent in all the v.-cc. Plants with corollas cut to the base (cf. var. *FISSA* Druce) are recorded from v.-c. 17. Limpsfield Common, 1922; *R.W.R.*

C. PERSICIFOLIA L. Alien. W. Europe and N. Asia. Naturalised in grassy places. Very rare. V.-c. 17. Limpsfield Common, *R.W.R.*; *Lond. Nat.* 19, 25 (1940). Under bushes near Halleloo Farm, Warlingham, 1949; *B.W.* Wimbledon Common, 1953; *C.A.*

C. RAPUNCULUS L. *Rampion.* Alien. Europe. Established on old walls and as a garden weed, and naturalised in grassy places. Very rare. V.-c. 17. Limpsfield Rectory, established as a garden weed, and on walls, 1919; *R.W.R.* Railway bank near Betchworth station, 1950; *B.M.C.M.* Erroneously recorded from Wimbledon Common in *Lond. Nat.*, 32, 125 (1953), the plant in question was *C. RAPUNCULOIDES*. V.-c. 21. Harrow Weald Common, 1908, *C.B.G.*; *Hb.S.L.B.I.*

C. PATULA L. *Spreading Bellflower.* Alien. Europe, including parts of Britain. Formerly established on waste ground. Very rare. V.-c. 21. Waste ground, Willesden Green, 1945-48, site now built over; *D.H.K.*

C. MEDIUM L. *Canterbury Bell.* Alien. S. Europe. Garden escape. Established on bare chalk cuttings and railway banks. Locally abundant. V.-c. 16. Chalk cuttings on railway between Chelsfield and Knockholt, abundant, 1943-53; *D.H.K.* Chalk cuttings on railway between Eynsford and Shoreham, 1949, *J.E.L.*; *Hb.L.* V.-c. 21. Railway bank near Greenford, in small quantity, 1951; *D.H.K.*

C. ALLIARIIFOLIA Willd. Alien. Asia Minor. V.-c. 17. Bomb crater, Brockham Hill, 1948, *J.E.L.*; *Hb.L.*; 1949; *J.E.L.*

LEGOUSIA Durande

L. HYBRIDA (L.) Delarb., *SPECULARIA HYBRIDA* (L.) A.DC. *Venus's Looking-glass.* Cornfields and arable ground. Rare. V.-c. 16. Between Dartford and Greenhithe, *F.J.H.*; *Fl. Kent*, 226. Near Eynsford,

1920; W.W. Near Greenhithe, 1946; F.R. V.-c. 17. Buckland Hills, 1899, *L.B.H.*; *Hb.H.* Cornfields near Fetcham Downs; Mickleham, 1918; *E.B.B.* Epsom Downs, 1918; *J.E.W.*; near Addington, 1926, *J.E.L.*; *Hb.L.* Limpsfield, rare, 1922; *R.W.R.* Roadside on Leatherhead By-pass, 1947-48, not seen since; edge of cornfield near Roaring Horse Farm, 1952; *J.E.S.D.* Wimbledon Common, casual, 1926; *C.A.* V.-c. 20. Wormley; *L.B.H.* Cole Green, 1920; *P.H.C.* Field near Hertford; *S.C.M.* V.-c. 21. Harefield, 1907, *C.B.G.*; *Hb.S.L.B.I.*; 1914; *J.E.C.* Near Mimms Hall, 1909; *C.B.G.*

L. SPECULUM-VENERIS (L.) Druce. Alien. Europe. V.-c. 21. Yiewsley, 1914, *J.E.C.*; *Hb.Mus.Brit.*

ERICACEAE

VACCINIUM L.

V. MYRTILLUS L. *Bilberry*, *Blaeberry*, *Whortleberry*, *Huckleberry*. Heaths, commons and woods on acid soils. Local. V.-c. 16. Holwood Park; Hayes and Keston Commons; W.W. Keston Bog, 1926, *J.E.L.*; *Hb.L.*; 1936, *P.H.C.*; *Hb.L.N.H.S.*; 1950; *A.W.J.* Crockham Hill Common, 1913; *P.H.C.* Near Well Hill, Shoreham, 1947; *J.B.M.* Whitby Scrub, S. of Chevening, abundant, 1950; *F.R.* Hosey Common, 1932; *B.T.W.* V.-c. 17. Limpsfield Chart and Common, 1914; *E.B.B.*; very plentiful, 1933; *P.H.C.*; 1937, *J.E.L.*; *Hb.L.* Wood near Headley Heath, *F.J.H.*; *Fl. Surrey*, 438. V.-c. 18. Epping Forest, Theydon, 1898, *R.W.R.*; *Hb.L.N.H.S.*; several patches; *C.N.* Epping Forest, near Wake Arms, a small patch, *R.W.R.*; *L.N.H.S.* 1915 *Trans.*, 45 (1916). In grounds of "Wansfeel", Piercing Hill, Theydon, just inside fence from Epping Forest, 1950; *B.T.W.* V.-c. 21. Hampstead Heath, 1906; *C.S.N.*; West Heath, two small patches, 1921; *P.W.R.*; one small patch left, 1945-53; *D.H.K.* Ken Wood, 1925; *R.W.R.*; a large patch, 1950; *D.H.K.*

GAULTHERIA L.

G. SHALLON Pursh. Alien. N. America. Naturalised in heathy places. Very local. V.-c. 16. About one mile N. of Toys Hill, Brasted, *J.E.L.*; *B.E.C.* 1936 *Rep.*, 266 (1937).

[ANDROMEDA L.]

A. POLIFOLIA L. *Marsh Andromeda*. Alien. Europe, including parts of Britain. V.-c. 19. Deliberately planted in Wake Arms Bog, 1951; teste *F.R.*]

CALLUNA Salisb.

C. VULGARIS (L.) Hull. *Ling*, *Heather*. Heaths, bogs and open woods on acid soils. Frequent in all the v.-cc. Plants with very hairy leaves are recorded from V.-c. 17. Oxshott; *E.B.B.* V.-c. 21. Hounslow Heath; *D.H.K.*

ERICA L.

E. CINEREA L. *Bell Heather*. Dry heathy places. Local. V.-c. 16.

Hayes Common; Dartford Heath, 1917; *P.H.C.*; seen in both places, 1948-52; *H.M.P.* Crockham Hill Common, 1913; *E.B.B.* V.-c. 17. Limpsfield Common and Chart, 1914; *E.B.B.*; 1933; *P.H.C.* Oxshott Heath, 1915; *E.B.B.*; 1948; *J.B.E.* Weybridge Heath, 1917; *E.B.B.* Shirley, 1922; Wimbledon Common, 1930; *R.W.R.*; 1953; *D.H.K.* Epsom Downs, 1934; *R.W.R.* Burgh Heath, 1941; *J.B.* Top of Fetcham Downs, 1948 and 1952; *B.W.* V.-c. 18. Snaresbrook Heath, 1900, *R.W.R.*; *Hb.L.N.H.S.* Brentwood, 1920; *P.H.C.* V.-c. 21. Hampstead Heath, 1883; *J.E.C.*; long extinct there; *D.H.K.* Stanmore Common, 1921; *P.W.R.* Harrow Weald Common; *C.S.N.*; 1944; *D.H.K.* Harefield Common; *C.S.N.* Hounslow Heath, 1944; *D.H.K.* V.-c. 24. Fulmer, 1912, *P.H.C.*; *Hb.L.N.H.S.* Black Park, 1931, *J.C.R.*; 1950; *D.H.K.*

E. TETRALIX L. *Cross-Leaved Heath, Bog Heather.* Bogs, and wet heathy places, rarely on the drier peaty soils. Local. V.-c. 16. Keston and St. Paul's Cray Commons, 1917; *P.H.C.*; still at both places, 1949; *F.R.* Chislehurst Common; *W.W.*; 1949; *F.R.* Crockham Hill Common, 1917; *R.W.R.* Hayes Common, 1937, *P.H.C.*; *Hb.L.N.H.S.* Joyden's and Petts Woods, 1948-49; *F.R.* V.-c. 17. Oxshott Heath, 1915; *E.B.B.*; 1948; *J.B.E.* Reigate Heath, 1921; *R.W.R.* Banstead Heath, 1926; *L.J.T.* Wimbledon Common, 1947; *E.B.Ba.*; 1953; *D.H.K.* Richmond Park, 1945-52; *B.W.* V.-c. 18. Epping Forest, 1952; *B.T.W.* V.-c. 19. Wake Arms Bog, 1911, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 20. Colne Heath, 1913, *C.S.N.*; *Hb.L.N.H.S.* V.-c. 21. Harrow Weald and Stanmore Commons; Hounslow Heath, 1944-52; *D.H.K.*

RHODODENDRON L.

R. PONTICUM L. Alien. S. Europe, Asia Minor, etc. Planted in woods and copses, and becoming naturalised on sandy and peaty soils. Locally abundant. V.-c. 17. Woods on downs above Chipstead, thoroughly established, 1924; *L.J.T.* Richmond Park, many self-sown seedlings, 1952; *L.N.H.S. Excursion.* V.-c. 18. Established, and reproducing naturally at High Beach, Jack's Hill and Knighton Wood, Epping Forest; Ongar Park Wood, 1952; *B.T.W.* V.-c. 21. Grimsdyke grounds, Harrow Weald, thoroughly established, and hundreds of self-sown seedlings seen; Chiswick House grounds; Scratch Wood, 1948; *D.H.K.* V.-c. 24. Black Park, many self-sown seedlings, 1954; *J.E.L.*

PYROLA L.

P. ROTUNDIFOLIA L. *Larger Wintergreen.* In a disused chalkpit. Very rare. V.-c. 18. Disused chalkpit, Grays, 1948; *B.T.W.*; 1949, *J.E.L.*; *Hb.L.*

P. MINOR L. *Common Wintergreen.* Woods, plantations and moors. Very rare. V.-c. 17. Titsey Plantation; *W.W.* [Byfleet, 1939, *L.G.P.*; *Hb.L.N.H.S.*; 1950; *J.E.L.*—outside Area.] V.-c. 21. Stanmore Grove, 1908; *C.B.G.*

MONOTROPACEAE**MONOTROPA L.**

M. HYPOPTYS L. agg. *Yellow Bird's-nest*. Mainly confined to beech-woods on the chalk. Local. V.-c. 16. Cuckoo Wood, Downe; Rushmore Hill, Halstead; Holwood Park; Farnborough; W.W. Wood W. of Shoreham, 1949; F.R. V.-c. 17. Box Hill, 1882; J.O.B. Titsey Woods, abundant, 1917; Reigate Hill, 1931; R.W.R. Leatherhead Downs; Headley, two stations, 1951; J.E.S.D. Limpsfield, R.W.R.; L.N.H.S. 1917 Trans., 15 (1918). V.-c. 18. Great Monk Wood, Loughton, 1922 and 1927; C.G.* teste B.T.W. V.-c. 20. Redwell Wood, a very few plants; E.M.D. The segregate M. HYPOPHEGEA Wallr. is recorded from v.-c. 17. Wood between Headley Lane and Mickleham Downs, 1917; E.B.B. det. C.E.S.

PLUMBAGINACEAE**LIMONIUM Mill.**

L. VULGARE Mill., STATICE LIMONIUM L. *Sea Lavender*. Muddy salt-marshes by the tidal estuary. Very local. V.-c. 18. Grays, 1908, P.H.C.; Hb.L.N.H.S.

ARMERIA Willd.

A. MARITIMA (Mill.) Willd., STATICE ARMERIA L., S. MARITIMA Mill. *Thrift, Sea Pink*. Alien. Europe, including parts of Britain. Deliberately introduced on bombed sites. Rare. V.-c. 21. Bombed site, Cripplegate, 1948-49, now destroyed; bombed site off Cheapside, 1952; A.W.J.

PRIMULACEAE**HOTTONTIA L.**

H. PALUSTRIS L. *Water Violet*. Ponds, ditches and slow streams. Local. V.-c. 16. Mottingham; W.W. V.-c. 17. N. of Titsey; W.W. Weybridge, 1904, L.B.H.; Hb.H. Between Thorpe and Chertsey, 1919, E.B.B.; Hb.B. V.-c. 18. Epping Forest, 1871, F.J.H.; Hb.Mus.Brit. Epping Forest, near the Rising Sun, Walthamstow, R.W.R.; L.N.H.S. 1915 Trans., 44 (1916); 1923; R.W.R.; Wake Valley Pond, 1927, B.T.W.; Hb.L.N.H.S.; 1951; L.N.H.S. *Excursion*. Loughton, 1938, J.H.G.P.; Hb.L.N.H.S. Shenfield; Romford; P.H.C. Chadwell, 1913, P.H.C.; Hb.L.N.H.S. High Wood, Ongar, 1952; B.T.W. & J.E.L. Curtis Mill Green, 1952; B.T.W. V.-c. 19. Epping Lower Forest, 1951; L.N.H.S. *Excursion*. V.-c. 20. Totteridge Green, 1901; C.S.N. Rye House, in a sluggish stream, 1912, P.H.C.; Hb.L.N.H.S. Bayford; P.H.C. Hertford Heath; S.C.M. V.-c. 21. Clapton Marsh, 1896, A.U.B.; Hb.L.N.H.S. Ditch near the railway, Clapton; C.N. Ponders End to Enfield, a few plants in ditches; J.O.B. Staines; P.H.C.; pools on Shortwood Common, and ditches on Staines Moor, 1944-53; D.H.K.

*Gould, C.

PRIMULA L.

P. VULGARIS Huds. *Primrose*. Woods, hedgebanks, railway banks, and open grassy places. Formerly common, and there are numerous old records from all the v.-cc. The plant is rapidly decreasing in the vicinity of London, as is the case around many other large towns. The following is a selection of the more modern records. V.-c. 16. Brasted, 1935; M.M.W. Darenth Wood, 1945; H.M.P. V.-c. 17. Coulsdon to Kenley, 1933; P.H.C. Headley, 1937, P.H.C.; Hb.L.N.H.S. Bookham Common, 1948-53; E.B.Ba. Wimbledon Common, two plants in a copse, 1934; C.A. V.-c. 19. Parndon Wood, 1953; R.M.P. V.-c. 20. Radlett; Aldenham, 1941; J.B. V.-c. 21. Railway banks near Harrow, 1940; H.W.Pa. Copse Wood, Northwood, 1945; B.W. Ruislip Woods; Cowley; Harrow Park, 1939-53; D.H.K. Syon Park, 1946; B.W. & D.H.K.

P. VERIS L. *Cowslip*. Meadows, pastures and banks, especially on the chalk. Local. V.-c. 16. Locally common. V.-c. 17. Locally frequent. V.-c. 18. Woodhatch, 1908, C.S.N.; Hb.L.N.H.S. Ludgate Plain; L.B.H. Chingford; J.O.B. Toothill; J.A.S. Navestock; R.W.R. Railway banks, Ongar, 1925; L.J.T. V.-c. 19. Galley Wood, 1909, P.H.C.; Hb.L.N.H.S. Near Nazeing Gate, 1915; C.S.N. North Weald; Roydon, 1951; R.M.P. V.-c. 20. Locally plentiful. V.-c. 21. Wood near Northwood, 1898; A.U.B. Railway banks and meadows, Potters Bar, 1902, C.S.N.; Hb.L.N.H.S. Broxbourne; Wormley; C.N. Between Edgware and Elstree, abundant; E.M.D. Between Harefield and Uxbridge, 1923; L.J.T.; 1944; D.H.K. Between Harefield and Ruislip, 1927; L.J.T. Brent Meadows, Hanwell; A.U.B.; long extinct there; D.H.K. Enfield, 1897; A.U.B. Harefield; Northwood; Gutteridge Wood, Northolt; Scratch Wood; Springwell, 1939-53; D.H.K. Syon House, 1927; L.J.T. V.-c. 24. Iver; P.H.C.

×VULGARIS. V.-c. 21. Park Wood, Ickenham, C.B.G.; Hb.S.L.B.I. This hybrid is undoubtedly more common than the solitary record suggests, and it should be searched for where ever the two parents grow together in quantity.

LYSIMACHIA L.

L. VULGARIS L. *Yellow Loosestrife*. Marshes, river- and stream-sides and verges of ponds and lakes. Local. V.-c. 16. Derrick Common, Farnborough; W.W. Darenth, 1944; F.R. Sutton-at-Hone Marshes, 1952; H.M.P. V.-c. 17. New Haw, near Weybridge, 1917; E.B.B.; 1940, P.H.C.; Hb.L.N.H.S. Esher, 1918; L.J.T. Bank of Thames between Kew and Richmond, 1918; E.B.B.; 1943; P.H.C.; 1950; D.H.K. Sheen Common, 1942-52; B.W. Ashtead; P.H.C. Banks of river Mole near Norbury Park, 1934 and 1940, P.H.C.; Hb.L.N.H.S. Near Oxted, local, 1919; R.W.R. V.-c. 18. Curtis Mill Green, 1951; Epping Forest, 1952; B.T.W. V.-c. 21. Sunbury, 1910, P.H.C.; Hb.L.N.H.S.; 1944; D.H.K. Towpath near Hampton Court, 1914; J.E.C.; 1922; L.J.T.; 1944; D.H.K. Cowley, 1915; J.E.C. Near Harefield Moor; bog, Laleham Park; near Alperton; Springwell; Yiewsley; Staines; near Isle-

worth; Perivale; Osterley Park; Neasden, 1939-52; D.H.K. Waste ground, Phillimore Walk, W.8, 1952; N.Y.S. V.-c. 24. Iver Heath, 1913; Colnbrook, 1910, P.H.C.; Hb.L.N.H.S. Thorney, 1905; P.H.C. Black Park, 1931; J.C.R.; 1950-53, abundant; D.H.K.

L. PUNCTATA L. Alien. Europe. Formerly naturalised on a river bank. Very rare. V.-c. 18. Banks of river Roding, 1908, C.L.C.; Hb.L.N.H.S.

L. CILIATA L. Alien. N. America. Garden escape. Established on waste ground. Rare. V.-c. 21. Waste ground by Thames, Chiswick, 1948, R.A.B.; Hb.K.; 1950; D.H.K.

L. NUMMULARIA L. *Creeping Jenny*. Moist hedgebanks and grassy places. Recorded from all the v.-cc. and well distributed throughout the area.

L. NEMORUM L. *Yellow Pimpernel*. Woods and shady hedgebanks. Rather common. V.-c. 16. Common. V.-c. 17. Frequent. V.-c. 18. Woodredon Hill; Lambourne; R.W.R. Chingford; P.H.C. Monk's Wood. Epping Forest, 1922; L.J.T. High Beach, 1938, W.E.G.; Hb.L.N.H.S. Thorndon Park; R.W.R. Loughton, 1953; R.M.P. V.-c. 19. Epping Lower Forest, 1951; L.N.H.S. *Excursion*. V.-c. 20. Frequent. V.-c. 21. Mainly confined to the north-western parts of the county where it is locally plentiful. South Mimms; P.H.C. Hadley Common; Highgate Woods; C.S.N. Harefield, 1913; J.E.C.; 1950; Copse Wood, Northwood; Ruislip Woods; Ickenham; Mimmshall Wood, 1939-53; D.H.K. V.-c. 24. Fulmer; P.H.C. Denham; D.H.K.

GLAUX L.

G. MARITIMA L. *Sea Milkwort*. Grassy salt marshes by the tidal estuary. Locally abundant. V.-c. 16. Swanscombe Marshes, 1917, P.H.C.; Hb.B.; 1948-51; H.M.P. River bank near Crossness, 1927; H.J.B. Littlebrook Marshes, 1930; R.W.R. Erith Marshes, 1937; P.H.C. Stone Marshes, 1938, P.H.C.; Hb.L.N.H.S.; 1948-51; H.M.P. V.-c. 17. Wimbledon Common Golf Links, evidently introduced with the turf, but flourishing, 1924; R.W.R. V.-c. 18. West Thurrock Marshes, 1904, C.S.N.; Grays, 1910, P.H.C.; Hb.L.N.H.S. Near Dagenham, 1920; L.B.H. Creekmouth, Barking, 1951; J.C.C. & J.E.L.

ANAGALLIS L.

A. TENELLA (L.) L. *Bog Pimpernel*. Damp peaty and grassy places, and in bogs. Very rare. V.-c. 17. Bog on Oxshott Common, a few plants, 1951; F.R. & R.A.B. V.-c. 18. Epping Forest between Theydon and Loughton, R.W.R.; L.N.H.S. 1915 Trans., 47 (1916). V.-c. 19. Wake Arms Bog, Epping Forest; C.N. Extinct in Epping Forest by 1933; J.R.

A. ARVENSIS L. *Scarlet Pimpernel, Poor Man's Weather Glass*. Coppiced woodlands, cultivated and waste ground, and by roadsides. Re-

corded from all the v.-cc., and common throughout the area. A variable species requiring further study. The following varieties have been recorded:—Var. *CARNEA* (Schrink.) Druce. V.-c. 16. Bickley; W.W. Var. *VERTICILLATA* Diard. V.c. 21. Rubbish-tip near Harefield, 1952; *J.E.L.*, *D.McC.* & *D.H.K.*, and var. *AZUREA* Wilmott. V.-c. 16. Potato field, Orpington, 1948; *J.B.M.* det. *A.J.W.* A plant with maroon-purple flowers is reported from v.-c. 17. Cornfield, Kingston Vale, 1942-43; *B.W.*

×FOEMINA. V.-c. 17. Chipstead Valley; W.W.; 1953; *C.D.P.*

A. FOEMINA Mill. *Blue Pimpernel*. Cultivated ground. Rare. V.-c. 16. Downe; W.W. V.-c. 17. Cornfield, Buckland Hills, 1919, *E.B.B.*; *Hb.B.* Field near Oxted, local, large plants, 18" high, 1921, *R.W.R.*; *L.N.H.S. 1920 Trans.*, 11 (1921). Allotments, Limpsfield, scarce, 1924; *R.W.R.* Wallington, 1924, *S.A.C.**; Norbury Park, 1944, *J.A.W.*; chalky field, Pebblecombe Hill, 1950, *B.M.C.M.*; *Hb.L.* Field above Chipstead Valley, 1950; *B.W.*; 1953; *J.E.L.* V.-c. 18. Chingford, 1902; *J.O.B.* Loughton, garden weed, 1951-53; *R.M.P.* Woodford, garden weed, 1951; *B.T.W.* V.-c. 21. Highgate, 1911; *J.E.C.* Isleworth; *H.B.* Near Heathrow, 1945, *B.W.* & *D.H.K.*; *Hb.K.*

CENTUNCULUS L.

C. MINIMUS L. *Chaffweed*. Disturbed heathy ground. Very rare. V.-c. 17. Bookham Common, 1949; *E.B.Ba.* & *A.H.N.*; very local, 1950; *C.P.C.*; *D.H.K.*

SAMOLUS L.

S. VALERANDI L. *Brookweed*. Wet places near the tidal estuary. Rare. V.-c. 16. Stone Marshes; W.W. Erith, 1948; *R.A.B.* Plumstead and Swanscombe Marshes, 1949; *F.R.*

OLEACEAE

SYRINGA L.

S. VULGARIS L. *Lilac*. Alien. S.E. Europe. Planted in shrubberies and thickets, and sometimes semi-naturalised. Not common. V.-c. 16. Hedges at Darenth, and near Farningham Road station, semi-naturalised, 1914; *E.B.B.* V.-c. 17. Near Oxted Mill, 1914; *E.B.B.*; 1924; *L.J.T.* V.-c. 21. Laleham Park; hedge between Hounslow Heath and Cranford; gravel pit between Dawley and Hillingdon; Horsenden Lane, Perivale, 1939-53; *D.H.K.*

FRAXINUS L.

F. EXCELSIOR L. *Ash*. Woods, scrub and hedges. Frequent in all the v.-cc.

LIGUSTRUM L.

L. VULGARE L. *Common Privet*. Hedges, scrub and wood borders. Common in all the v.-cc., especially on calcareous soil.

*Chambers. S. A.

L. OVALIFOLIUM Hassk. Alien. Japan. Commonly planted in hedges and thickets, though it does not appear to become naturalised. Frequent in all the v.cc.

APOCYNACEAE

VINCA L.

V. MAJOR L. *Greater Periwinkle*. Alien. S. Europe and N. Africa. Garden escape. Naturalised in copses and on hedgebanks. Not common. V.-c. 16. Between Chelsfield and Shoreham, 1930; *P.H.C.* Beech wood, Stone, 1948; *H.M.P.* V.-c. 17. Island in river, Carshalton, 1871, *F.J.H.*; *Hb.Mus.Brit.* Ewell, 1919; Headley, 1926; *L.J.T.* Cobham; near Merstham, 1937, *P.H.C.*; *Hb.L.N.H.S.* Chertsey, 1932; Leatherhead, 1935; Godstone, 1938; Ashtead, 1944; *P.H.C.* Bookham Common, 1953; *A.W.J.* V.-c. 18. Beaumont; *P.H.C.* Buckhurst Hill, 1912, *P.H.C.*; Chingford, 1938, *W.E.G.*; *Hb.L.N.H.S.* Lane from Sewardstone to High Beach, 1903; *C.S.N.* Near Tawney Hatch, 1926; *L.J.T.* V.-c. 20. Mill Green, Essendon, 1920; *P.H.C.* Aldenham Churchyard, naturalised, 1924; *L.J.T.* V.-c. 21. Harmondsworth, 1907; *P.H.C.* Near Harefield; between Kingston Bridge and Hampton Court; Dawley; Northolt, 1939-53; *D.H.K.* Hounslow Heath; *B.W.* Near Ealing, 1946; *F.P.D.B.* & *D.H.K.* V.-c. 24. Denham, 1913; *P.H.C.* Horton, 1921; Wyrardisbury, 1930; *L.J.T.*

V. MINOR L. *Lesser Periwinkle*. Woods, copses, thickets and hedgebanks. Locally plentiful. V.-c. 16. Southborough; Chislehurst; *W.W.* Near Brasted, 1935; *M.M.W.* Near Darenth Grange, 1948-52; *H.M.P.* V.-c. 17. Limpsfield Common, in quantity, 1917; *E.B.B.* Near Oxted, 1925; *R.W.R.* Redhill, 1931; Leatherhead, 1944; *P.H.C.* Near Cobham, 1927; *L.J.T.*; 1937; *P.H.C.*; 1950; *B.W.* Near Sheep Lees, Leatherhead, 1949; *M.B.G.* Wimbledon Common, 1927; Putney Heath, 1935; *C.A.* Bookham Common, 1953; *A.W.J.* V.-c. 18. Highams Park, 1902; *J.O.B.* Toothill, 1904; *J.A.S.* Woodhatch; Beaumont, 1909; *P.H.C.* Near South Weald, 1922; *L.J.T.* Loughton, garden escape, 1953; *R.M.P.* V.-c. 20. Thickets near Batchworth Heath, 1902, *C.S.N.*; *Hb.L.N.H.S.*; 1953; *D.H.K.* Bricket Wood; Shenley; Aldenham; *P.H.C.* Carpenders Park, plentiful in a small wood, 1919-22; *R.S.R.F.* Near Hatfield; *L.B.H.* Mill Hill; *E.M.D.*; 1927; *J.E.C.*; 1953; *D.H.K.* Southgate, 1902; *L.B.H.* Near Finchley, 1904; *C.S.N.*; abundant on hedgebanks, 1946; *J.E.L.* & *D.H.K.* Hayes, 1920; *L.J.T.* Whitewebbs Park, Enfield, 1897, *A.U.B.*; *Hb.L.N.H.S.*; 1945; *L.J.J.*; 1952; *L.M.P.S.* Northwood, 1928; *B.T.W.*; 1947; Harefield; Northolt; Bentley Priory; Bishops Wood, Hampstead, 1944-53; *D.H.K.* V.-c. 24. Near Black Park, 1950; *D.H.K.*

LOGANIACEAE

BUDDLEJA L.

B. DAVIDI Franch., *B. VARIABILIS* Hemsl. Alien. China. Sometimes grown in gardens. Established on waste ground, bombed sites, walls,

etc., and in disused chalk- and gravel-pits. Common and increasing. Frequent in v.-cc. 16-18, 20, 21 and 24; unrecorded so far from v.-c. 19. The var. *WILSONII* (Wils.) Rehd. & Wils. has occurred on bombed sites in the City and central London, teste *J.E.L.*

GENTIANACEAE

BLACKSTONIA Huds.

B. PERFORIATA (L.) Huds., **CHLORA PERFORIATA** (L.) L. *Yellow-wort*. Downs, and grassy places on the chalk. Locally abundant. V.-c. 16. Common on calcareous soils. V.-c. 17. Frequent on the chalk. Oxted, on gault, 1924; *R.W.R.* V.-c. 18. West Thurrock, plentiful, 1908, *P.H.C.*; *Hb.L.N.H.S.* Chalk-pit, Grays, 1949, *J.E.L.*; *Hb.L.* V.-c. 20. Near Bayford, 1937; *R.W.R.*; 1953; *L.N.H.S. Excursion.* V.-c. 21. Harefield, 1914-17; *J.E.C.* Down above Springwell Lock, 1945-53; *D.H.K.*

CENTAURIUM Hill.

C. ERYTHRAEA Rafn, **C. MINUS** auct., **C. UMBELLATUM** auct., **ERYTHRAEA CENTAURIUM** auct. *Common Centaury*. Dry grassy places and open woods. Locally abundant, especially on the chalk. V.-c. 16. Common. V.-c. 17. Frequent. V.-c. 18. Noak Hill; *P.H.C.* Epping Forest, *R.W.R.*; *L.N.H.S. 1915 Trans.*, 28 (1916). Tawney Hatch, 1926; *L.J.T.* Beachet Wood, 1950; Coopersale, 1951; *R.M.P.* V.-c. 19. Latton Park, 1951; *R.M.P.* V.-c. 20. Chandlers Cross, abundant, 1907, *C.S.N.*; *Hb.L.N.H.S.* Wormley West End, 1908; Bushey, 1915; *P.H.C.* Radlett, 1941; *J.B.* Goose Green, Broxbourne, plentiful; *C.N.* Ball's and Cowheath Woods, 1953; *R.M.P.* V.-c. 21. Eastcote, 1898, *F.E.M.*; *Hb.L.N.H.S.* Stanmore Common, 1909; *C.S.N.* Warren Gate; *P.H.C.* Whitewebbs Park, Enfield, 1945; *L.J.J.* Harefield; Ruislip Woods; New Years Green; Ickenham, 1939-53; *D.H.K.* Gravel pit, East Bedfont, 1945; *E.W.D.*; 1947; *D.H.K.* V.-c. 24. Fulmer; *P.H.C.*

C. PULCHELLUM (Swartz) Druce, **ERYTHRAEA PULCHELLA** (Swartz) Fries. Grassy places. Very local. V.-c. 17. Edge of Titsey Plantation, local, 1922; downs above Barrow Green, plentiful, 1928; *R.W.R.* W. of Epsom Common; *W.W.* Epsom Common, 1947, *W.M.*; The Grennell, Sutton, 1926, *E.C.W.*; *Hb.L.* Lane from Effingham Junction to Banks Common, 1927; *E.B.B.* Hillside E. of Pebblecombe, 1952; *B.M.C.M.* & *B.W.*

GENTIANELLA Moench

G. AMARELLA (L.) H.Sm., **GENTIANA AMARELLA** L., **G. AXILLARIS** (F. W. Schmidt) Reichb. *Felwort*. Dry slopes, banks and pastures on the chalk. Locally abundant. V.-c. 16. Downs near Knockholt, 1925; *L.J.T.* Shoreham, 1929; *R.W.R.*; 1952; *H.M.P.* Scrubby bank near Hazel Wood, Downe, 1948; *J.B.M.* V.-c. 17. Frequent on the chalk. V.-c. 18 Chalk-pit, Grays, 1949, *J.E.L.*; *Hb.L.* V.-c. 20. Near Rickmansworth, 1949; *D.H.K.* V.-c. 21. Harefield, 1919; *J.E.C.* Springwell, 1949-53; *D.H.K.* The var. *PALLIDA* Pugsl. is recorded from v.-c. 17. Colley Hill,

Reigate, 1949, *B.M.C.M.*; *Hb.L.* A plant with a very pale mauve corolla is reported from v.-c. 17. Banstead Heath, 1931, *C.E.B.*; *Hb.L.* A fine large form 35 cm. tall, which persists, is reported from v.-c. 17. Fairchilds, Farleigh, 1932 and 1941, *J.E.L.*; *Hb.L.*

X GERMANICA = *G. × PAMPLINII* (Druce) E. F. Warburg. V.-c. 21. Sloping bank of chalk-pit above Springwell Lock, 1950; *J.P.M.B.* & *D.H.K.*

G. ANGLICA (Pugsl.) E. F. Warburg, *GENTIANA ANGLICA* Pugsl., *G. AMARELLA* var. *PRAECOX* Towns., *G. LINGULATA* var. *PRAECOX* (Towns.) Wettst. Chalk downs. Very local. V.-c. 16. Kemsing Downs, very scarce, 1946; *F.R.*; apparently not refound since; *J.E.L.* V.-c. 17. Banstead Downs, 1921, *J.C.**; 1926, 1936, 1944, still plentiful, 1946, *J.E.L.*; *Hb.L.* Riddlesdown, 1943, *J.E.L.*; *Hb.L.*; 1949; *B.W.*; 1953; *E.B.Ba.*

G. GERMANICA (Willd.) E. F. Warburg, *GENTIANA GERMANICA* Willd. Calcareous grassland. Very rare. V.-c. 21. Down above Springwell Lock, in fair quantity, 1945-50, *D.H.K.*; *Hb.K.*; much reduced in quantity as a result of chalk quarrying operations, and in danger of extermination, 1951-53; *D.H.K.*

[*GENTIANA L.*]

G. PNEUMONANTHE L. *Marsh Gentian.* This handsome species has not been recorded by our members, but there are old records for v.-c. 17, and it may yet be re-found in the Esher area.]

MENYANTHACEAE

MENYANTHES L.

M. TRIFOLIATA L. *Buckbean.* Ponds, lake verges, and in the wetter parts of bogs and marshes. Local. V.-c. 16. Holwood Park, 1938; *D.McC.*; 1950; *J.D.L.* V.-c. 17. Bog below the windmill, Wimbledon Common, 1871, *F.J.H.*; *Hb.Mus.Brit.*; 1925; *J.E.L.*; *Hb.L.*; 1929-36; *C.P.C.*; 1950; *D.H.K.* Stew Ponds, Epsom Common, 1935; *P.H.C.*; 1951; *J.E.S.D.* Mitcham Common, 1923, *J.E.L.*; *Hb.L.*; survived until about 1932; *J.E.L.* V.-c. 18. Coopersale Common, 1909; *V.R.C.*; 1938, *J.H.G.P.*; *Hb.L.N.H.S.*; 1953; *L.N.H.S. Excursion.* Pond near Ambresbury Banks, 1917; *E.B.B.*; 1926, *B.T.W.*; *Hb.L.N.H.S.* Chingford, 1934; *P.H.C.* Loughton, 1943; *J.R.* V.-c. 20. Totteridge Green; *C.S.N.* Bayford; *P.H.C.*; 1953; *L.N.H.S. Excursion.* Broxbourne, 1910, *P.H.C.*; *Hb.L.N.H.S.* Wormley West End, a small patch; *C.N.* V.-c. 21. West Heath, Hampstead, 1901; *J.E.Wh.*; extinct by 1913; *P.H.C.* Yiewsley, 1910; *C.B.C.*; 1912-19; *J.E.C.* Golders Hill Park, 1921; *P.W.R.* Verge of lake, Grimsdyke, Harrow Weald, abundant, 1946, but probably planted; *B.W.* & *D.H.K.* Pond near Stanmore Heath, 1949; *R.A.B.*

*Chambers, J

NYMPHOIDES Hill

N. PELTATA (S. G. Gmel.) Kuntze, *LIMNANTHEMUM PELTATUM* S. G. Gmel. *Fringed Waterlily*. Ponds and slow rivers. Locally plentiful near the upper parts of the Thames, rather rare elsewhere. V.-c. 17. Pond on Clapham Common, 1871, *F.J.H.*; *Hb.Mus.Brit.* By river Thames, Walton-on-Thames, 1913; *W.B.*; 1950; *D.H.K.* Weybridge Canal, 1935, *C.L.W.*; *Hb.B.*; plentiful, 1949; *D.H.K.* Ditch by river Thames, close to Old Deer Park, Richmond, 1918; *E.B.B.*; 1934; *H.S.* V.-c. 18. Pond near Ambresbury Banks, 1901, *R.W.R.*; 1910, *P.H.C.*; *Hb.L.N.H.S.*; 1917; *E.B.B.*; has not been seen there for some years; *B.T.W.* V.-c. 21. Hampton Court, 1913; *P.H.C.*; still abundant in Long Water and the Canal; Bushy Park; Thames backwater by Walton Bridge, abundant; Syon Park, 1939-53; *D.H.K.*

POLEMONIACEAE

POLEMONIUM L.

P. CAERULEUM var. DISSECTUM Benth. *Jacob's Ladder*. Alien. Europe, including parts of Britain. V.-c. 16. Gravel pit, Hayes, 1927, *St.J.M.*; *B.E.C. 1927 Rep.*, 311 (1928).

PHLOX L.

P. PANICULATA L. Alien. N. America. Garden escape. V.-c. 21. Waste ground, Hanwell, 1933 and 1950; Roxeth, 1940; *D.H.K.*

BORAGINACEAE

HELIOTROPIUM L.

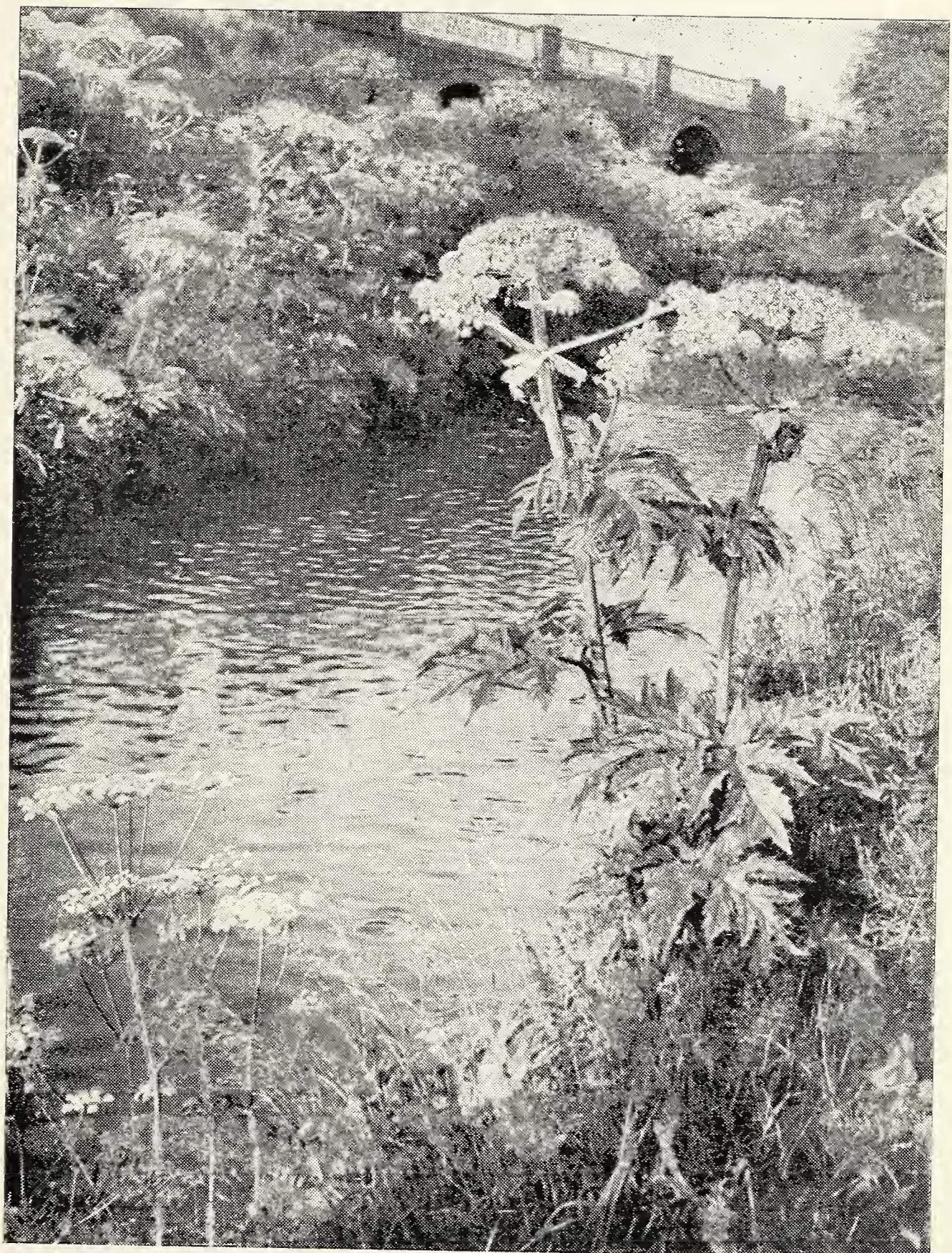
H. EUROPAEUM L. Alien. Europe. V.-c. 18. Rubbish-tip, Barking, 1953, *J.E.L.*; *Hb.L.*

CYNOGLOSSUM L.

C. OFFICINALE L. *Hound's-tongue*. Grassy places and wood borders on dry soils, on sand gravel and chalk. Local. V.-c. 16. N.E. of Oxtord, 1922; *L.J.T.* Chelsfield to Shoreham, 1930; *P.H.C.* Eynsford, 1929; *R.W.R.* Lullingstone Park, *C.S.N.*; *Hb.L.N.H.S.* Roadside, Farningham to Maplescombe, 1948; *H.M.P.* V.-c. 17. Downs above Limpsfield, 1914; Headley Heath; near Nork Wood, Headley, 1917; Mickleham Downs, 1925; *E.B.B.* Headley to Chipstead, 1930; *P.H.C.* Near Worm's Heath, 1924; between Kenley and Coulsdon, 1934; *P.H.C.* Box Hill, 1923, *J.E.L.*; *Hb.L.*; 1953; *D.H.K.* Norbury Park, 1951; *J.E.S.D.* Wimbledon Common, 1936; *C.A.*; 1945; *B.W.* & *J.W.B.*; 1949; *R.A.B.* Richmond Park, 1919; *L.J.T.* Riverside, Molesey, 1953; *L.N.H.S. Excursion*. V.-c. 20. Near Ware, 1953; *L.M.P.S.* V.-c. 21. Harefield, 1903, *C.B.G.*; *Hb.S.L.B.I.* Bombed site, Cripplegate, E.C., 1952; *A.W.J.*

C. GERMANICUM Jacq., C. MONTANUM auct. *Green Hound's-tongue*. Open woods, copses and hedgebanks on the chalk. Very local, and confined to v.-c. 17. V.-c. 17. Norbury Park, 1875, *F.J.H.*; *Hb.Mus.Brit.*; 1919, *E.B.B.*; *Hb.B.*; 1935 and 1947, *J.E.L.*; *Hb.L.*; still plentiful, 1953; *J.E.L.* Near Thirty Acre Barn, Ashtead, 1927, *J.E.L.* & *E.C.W.*; *Hb.L.*

PLATE V.



Heracleum Sphondylium L. and *H. Mantegazzianum* Somm. & Lev. Bank of river Brent, near Ealing, Middx., 1953.

T. G. Collett.

PLATE VI.



Symphytum tuberosum L. Stanmore Common, Middx., 1952.
W. F. C. Marwood.

Edge of Mickleham Downs, above Headley Lane; *C.L.W.*; 1926; *L.J.T.*; 1947, *J.E.L.* & *D.H.K.*; *Hb.L.* Headley Lane, at bottom of steep path, 1949; *J.E.L.*; *L.N.H.S. Excursion*; 1951; *J.E.S.D.* The Norbury Park population appears to be fairly constant in numbers but elsewhere the species fluctuates considerably in quantity. At the present time (1953), it is apparently increasing about Mickleham Downs.

LAPPULA Gilib.

L. MYOSOTIS Moench, *L. ECHINATA* Gilib. Alien. Europe. V.-c. 16. Beckenham Park Place, 1934, *E.J.B.*; *Hb.L.* V.-c. 17. Dried-up bed of river Mole below Norbury Park, 1934, *P.H.C.*; *Hb.L.N.H.S.* Disused brickfield, Earlswood; Earlswood Pond rubbish-tip, 1948, *B.M.C.M.*; *Hb.L.* det. *J.E.L.* V.-c. 18. Rubbish-tip, Barking, 1953, *B.T.W.*; *Hb.L.* V.-c. 20. Totteridge, 1925; *J.E.C.* V.-c. 21. Yiewsley, 1910 and 1924; Hackney Marshes, 1913 and 1924, *J.E.C.*; *Hb.Mus.Brit.* West Drayton, 1914; Finchley, 1929; *J.E.C.* V.-c. 24. Uxbridge, 1910, *J.E.C.*; *Hb.Mus.Brit.*

ASPERUGO L.

A. PROCUMBENS L. *Madwort*. Alien. Europe, W. Asia and N. Africa. V.-c. 17 Warlingham; *A.Be.** Brickfield tip, Earlswood, 1953; *B.M.C.M.* & *E.M.C.I.*

AM SINCKIA Lehm.

A. LYCOPSOIDES (Lehm.) Lehm. Alien. California. V.-c. 17. Mizen's Market Garden. Ewell, 1944, *A.E.E.*; *Hb.E.C.M.* V.-c. 21. Yiewsley, 1924, *J.E.C.*; *Hb.Kew.*

A. ANGUSTIFOLIA Lehm. Alien. California. V.-c. 17. Mortlake, 1921; *J.E.C.* V.-c. 24. Near Iver, 1916, *J.E.C.*; *Hb.Mus.Brit.*

SYMPHYTUM L.

For descriptions of the following species see E. B. Bangerter and B. Welch, "The Comfreys of the London Area", *Lond. Nat.*, 33, 55-58.

S. OFFICINALE L. *Comfrey*. River- and streamsides and damp places, more rarely on dry hedgebanks, and in rough grassy places. Common throughout the area.

S. TUBEROSUM L. *Tuberous Comfrey*. Damp woods, thickets and hedgebanks. Rare. V.-c. 16. Greenhithe, 1932, *P.H.C.*; *Hb.L.N.H.S.*; lane between Cobham Terrace and Mounts Road, 1948-53; *H.M.P.* V.-c. 21. Stanmore Common, 1908, *A.B.J.* & *C.B.G.*; *Hb.Mus.Brit.*; 1949-53; *D.H.K.*

S. ORIENTALE L. Alien. Turkey. Grown in gardens, and cultivated as a fodder plant. Established on hedgebanks, waste ground and in grassy places. Rare. V.-c. 16. Near Greenhithe, 1945, *J.E.L.*; *Hb.L.N.H.S.* V.-c. 17. Chipstead, 1916, *C.E.B.*; Weybridge Common, 1927, *H.W.P.*; *Hb.Mus.Brit.* Bombed site, near Kew, 1950; *K.E.B.* Reigate Heath, 1951; *B.M.C.M.* & *B.W.*; 1952; *R.A.B.* Ham Common, 1943-53; *B.W.* V.-c. 21. Winchmore Hill, 1922, *L.B.H.*; *Hb.Mus.Brit.* Perivale churchyard, 1945; Harrow-on-the-Hill churchyard, 1953; *B.W.*

S. PEREGRINUM Ledeb. Alien. Caucasus. Cultivated for fodder. Established by roadsides and in grassy places. Not common. V.-c. 17.

*Beadell, A.

Roadside at foot of Colley Hill, Reigate, 1917, *E.B.B.*; *Hb.B.* fide *C.E.S.* Fetcham Mill Pond, 1928, *H.W.P.*; *Hb.Mus.Brit.* Ashtead, 1936; *J.B.E.* Banstead; *A.E.E.* Redhill, 1950; *B.M.C.M.* & *B.W.* Earlswood, 1953; *B.W.* Bookham Common, 1953; *E.B.Ba.* Field near Woodcote Park, Epsom, 1930, *J.E.L.*; *Hb.L.* Wimbledon Common, 1937; *C.A.* Near Burgh Heath, 1936; Chertsey, 1941, *P.H.C.*; *Hb.L.N.H.S.* det. *E.B.Ba.* & *B.W.* V.-c. 21. Woodside Park, 1916; *J.E.C.* Yiewsley, 1914-19; Finchley, 1912; Church End, Finchley, 1912-19, *J.E.C.*; *Hb.Mus.Brit.* Hanger Hill, Ealing, 1946; *F.P.D.B.* & *D.H.K.* Well established along the Lea Navigation Canal about Tottenham Lock, 1949; *F.C.* North Circular Road by Finchley Common, 1950; *H.W.Pa.* & *D.H.K.* Watts Common, Harefield, 1953, *A.M.*, *E.B.Ba.*, *T.G.C.* & *D.H.K.*; *Hb.Mus.Brit.* The hybrid with *S. officinale* should be looked for when the two species are found growing together.

S. ASPERUM Lepech., *S. ASPERRIMUM* Sims. Alien. Caucasus and Persia. Established on waste ground. Frequently confused with the previous species and in the absence of voucher specimens both the following records are suspect. V.-c. 17. Mortlake, 1916 and 1927; *J.E.C.* V.-c. 24. Near Iver, 1916; *J.E.C.* See also *Lond. Nat.*, 33, 57 (1954).

S. GRANDIFLORUM DC. Alien. Caucasus. Established in grassy places. Very rare. V.-c. 16. Abbey Wood, 1953, *G.A.M.*; *Hb.Mus.Brit.*

BORAGO L.

B. OFFICINALIS L. *Borage*. Alien. Europe. Garden escape. V.-c. 16. Eynsford, 1945, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 17. Eastfields, Mitcham, 1928, *J.E.L.*; *Hb.L.* V.-c. 20. Wormley West End, 1908; *P.H.C.* V.-c. 21. Rubbish-tip, Hornsey, 1896; *C.S.N* East Finchley, 1908, *J.E.C.*; *Hb.Mus.Brit.* Yiewsley, 1913; Finchley, 1927; *J.E.C.* Between Staines and Laleham, 1947; *D.H.K.* Hanger Hill, Ealing; *F.P.D.B.* Highgate, 1945; *R.S.R.F.*

TRACHYSTE MON D. Don

T. ORIENTALIS (L.) Don. Alien. Mediterranean region. Naturalised on hedgebanks. Rare. V.-c. 16. Near Shoreham, 1950; *D.H.K.* Barneshurst, near Crayford, 1950-53; *G.A.M.* V.-c. 17. Richmond, near Star and Garter, 1947-53; *B.W.*

PENTAGLOTTIS Tausch

P. SEMPERVIRENS (L.) Tausch, *ANCHUSA SEMPERVIRENS* L. *Alkanet*. Alien. Europe. Naturalised by roadsides and river- and streamsides, also on hedgebanks, and established on waste ground and rubbish-tips. Not common. V.-c. 16. Green Street Green, 1937; *P.H.C.* Greenhithe; Darenth Village, 1948-50; *H.M.P.* Chelsfield, 1937, *P.H.C.*; *Hb.L.N.H.S.* Rubbish-tip, Sevenoaks, 1951; *D.McC.* V.c. 17. Bookham Common, 1953; *A.W.J.* Box Hill, 1901, *L.B.H.*; *Hb.H.* Walton-on-Thames, 1930; *P.H.C.* Weybridge, 1940, *P.H.C.*; *Hb.L.N.H.S.* Thames bank between Kew and Richmond, 1943; *B.W.*; 1949; *R.A.B.* Bombed site near Kew, 1950; *K.E.B.* Reigate, two localities, 1951; *B.M.C.M.* V.-c. 20. Broxbourne, 1904, *C.S.N.*; 1911, *P.H.C.*; *Hb.L.N.H.S.* Near Totteridge, 1950; *F.C.* V.-c. 21. Between Hampton Court and Kingston Bridge,

1903, *C.B.G.*; *Hb.S.L.B.I.* Harrow, garden weed, 1940-45; Pinner churchyard, 1947; roadside near Laleham, abundant, 1946; *D.H.K.* Feltham, garden weed, 1946; *E.W.D.*; gravel pit, 1952; *B.W.* Worton Road, Isleworth, 1945; *A.W.W.* Near Hounslow Heath, 1947; *H.B.* & *D.H.K.*

ANCHUSA L.

A. OFFICINALIS L. Alien. Europe. V.-c. 16. Railway bank, Elmstead, casual; *W.W.* V.-c. 21. East Finchley, 1908; *J.E.C.*

A. AZUREA Mill., *A. ITALICA* Retz. Alien. S. Europe. V.-c. 21. Muswell Hill, 1906, *J.E.C.*; *Hb.Mus.Brit.* det. *A.M.* & *E.B.Ba.*

LYCOPSIS L.

L. ARVENSIS L., *ANCHUSA ARVENSIS* (L.) Bieb. *Field Bugloss.* On light sandy and chalky soils; mainly on cultivated ground but also in waste places. Local. V.-c. 16. Chislehurst; St. Mary Cray; *W.W.* Lock's Bottom, 1917; *P.H.C.* Tandridge, 1937-38; *J.B.E.* Brasted, 1945, *P.H.C.*; *Hb.L.N.H.S.* Stone; Darenth; Swanscombe, 1948-51; *H.M.P.* V.-c. 17. Weybridge, 1900, *L.B.H.*; *Hb.H.*; 1917; *E.B.B.* Near Oxted, common, 1917; *R.W.R.* Wimbledon Common, casual, 1923; *C.A.* Ham, 1946, *R.M.P.* V.-c. 18. Little Warley, 1907; Grays, 1913; *P.H.C.* V.-c. 20. Near Broxbourne; *L.B.H.* Rye House, 1910, *P.H.C.*; *Hb.L.N.H.S.* Radlett, 1941; *J.B.* V.-c. 21. Harefield; *E.M.D.*; 1915; Finchley, 1908; *J.E.C.* Highgate, 1894, on ballast of new road; *C.S.N.* Grounds of Ashford County Hospital, destroyed by building; *J.K.H.* Bombed site, Crutched Friars, E.C., 1946, *J.E.L.*; *Hb.L.* Bush Hill Park, Enfield, 1947; *P.J.H.* Hampton Court Park, among crops; gravel pit by Hounslow Heath, a single plant, 1949; rubbish-tip, Hanwell, one plant, 1951; *D.H.K.*

ALKANNA Tausch

A. LUTEA (Desr.) DC. Alien. S. Europe. V.-c. 18. Garden weed, Chingford; *C.N.*

MYOSOTIS L.

M. SCORPIOIDES L., *M. PALUSTRIS* (L.) Hill. *Water Forget-me-not.* Wet places by streams and ponds. Common throughout the area. The var. *STRIGULOSA* (Reichb.) Schinz & Kell. is recorded from v.-c. 19. Waltham Abbey, 1928, *C.E.B.*; *Hb.L.*; 1953; *R.M.P.* V.-c. 21. Shortwood Common, Staines, 1944; *D.H.K.* Highgate Ponds, 1945; *R.S.R.F.*

M. SECUNDA A. Murr., *M. REPENS* auct. *Water Forget-me-not.* Wet heathy ditches, and pond verges on peaty soils. Rare, or overlooked. V.-c. 17. Yalden Spring, Limpsfield Chart, very local, 1924; *R.W.R.* teste *C.E.S.* Bookham Common, 1952, *E.B.Ba.* & *C.P.C.* Arbrook Common, Esher, 1942, *A.E.E.*; *Hb.E.C.M.* Oxted Mill Pond, 1938; *J.B.E.*

M. CAESPITOSA K. F. Schultz, *M. LAXA* ssp. *CAESPITOSA* (K. F. Schultz) Hyl. *Water Forget-me-not.* Marshes, stream- and pond sides. Common. V.-c. 16. Chislehurst; Southborough; Darrack Wood, Orpington; *W.W.*

Dartford Marsh, 1933; *P.H.C.* V.-c. 17. Limpsfield, local, 1919; *R.W.R.* Bookham Common, 1952; *E.B.Ba.* & *C.P.C.* West End Common, Esher, 1925; *E.B.B.*; 1945; *R.M.P.* Arbrook Common, Esher, 1942, *A.E.E.*; *Hb.E.C.M.* Near Epsom, 1925, *J.E.L.*; *Hb.L.* Epsom Common, 1935; *P.H.C.* Mitcham Common, 1949; Oxted, 1937; *J.B.E.* Banstead Downs, 1951; *R.M.P.* Wimbledon Common, 1932; *P.H.C.* Ham Common, 1943; Richmond Park, 1945; *B.W.* V.-c. 19. Roydon, 1936; *P.H.C.* Near Galley Hill; *J.B.E.* V.-c. 21. Hampton Court Park, 1908, *P.H.C.*; *Hb.L.N.H.S.*; 1953; Shortwood Common, Staines; Finchley Common; Scratch Wood, 1944-53; *D.H.K.* West Drayton, 1936; *P.H.C.* Ruislip; *W.W.*; 1950; *D.H.K.* Stanmore Common, 1936, *P.H.C.*; *Hb.L.N.H.S.*; 1939-53; *D.H.K.* V.-c. 24. Horton, 1903, *C.S.N.*; *Hb.L.N.H.S.*

M. SYLVATICA Hoffm. *Wood Forget-me-not.* Woods, mainly on the chalk. Local. V.-c. 16. N. of Brasted, 1935; *M.M.W.* V.-c. 17. Wood near Titsey Church, 1913, *C.S.N.*; *Hb.L.N.H.S.*; 1917; *R.W.R.* Near Chelsham; *W.W.* Headley, 1924, *A.P.S.**; Epsom, 1931, *I.B.B.*; *Hb.E.C.M.*, both det. *A.E.W.* Bookham Common, 1953; *A.W.J.* Titsey Wood, abundant, 1933 and 1944, *J.E.L.*; *Hb.L.* Near Oxted, *R.W.R.*; *L.N.H.S.* 1914 *Trans.*, 14 (1915). Woldingham, 1949; *R.M.P.* Banstead, 1942; *J.B.* V.-c. 21. Near Harefield, 1946, *B.W.*; *Hb.Kew* conf. *A.E.W.* Old Park Wood, Harefield, scarce, 1949-53; rubbish-tip, Hanwell, 1947; *D.H.K.* In the woods around Titsey this plant is abundant and almost certainly native, but in some of the other localities the status is doubtful.

M. ARVENSIS (L.) Hill. *Common Forget-me-not.* Cultivated ground, by roadsides and in woods. Frequent in all the v.-cc. The var. *SYLVESTRIS* (Schlecht.) Druce is reported from v.-c. 21. Harefield; *D.H.K.*

M. HISPIDA Schlecht., *M. COLLINA* auct. *Early Forget-me-not.* On dry shallow soils, railway tracks and old walls. Locally abundant. V.-c. 16. Crofton; *W.W.* Lullingstone Park, 1930; *P.H.C.* Farningham, 1950; *E.B.Ba.* Darenth Wood and Stone; *H.M.P.* V.-c. 17. Mickleham Downs, on ant hills, 1933; Featherbed Lane, Farleigh, 1924; Worm's Heath, 1922, *J.E.L.*; *Hb.L.*; local, 1923; Limpsfield, very local, 1922; *R.W.R.* West End Common, Esher, 1945; Banstead Downs, 1951; *R.M.P.* Reigate, 1951; *B.M.C.M.* & *B.W.* V.-c. 19. Wall at Netteswell, 1952; *R.M.P.* V.-c. 20. Chandlers Cross; *C.S.N.* North Mimms; near St. Albans; *P.H.C.* Panshanger, 1952; *R.M.P.* V.-c. 21. Whitchurch, 1909, *P.H.C.*; *Hb.L.N.H.S.* South Mimms; *P.H.C.* Springwell, 1946; *B.W.*; 1948; *D.H.K.* Bedfont gravel pits; *A.W.W.* Wood End, near Harrow; Cranford; *D.H.K.* V.-c. 24. Denham; *P.H.C.*

M. DISCOLOR Pers., *M. VERSICOLOR* Sm. *Yellow and blue Forget-me-not.* Grassy places on light soils, and in open communities. Locally plentiful. V.-cc. 16 & 17. Common. V.-c. 18. High

*Snell, A. P.

Beech; *R.W.R.* V.-c. 19. Outskirts of Galley Wood, 1915, *C.S.N.*; *Hb.L.N.H.S.*; 1953; North Weald, 1951; *R.M.P.* V.-c. 20. Oxhey Woods; *C.S.N.* Wormley West End, 1910, *P.H.C.*; *Hb.L.N.H.S.* Panshanger, 1951-53; *R.M.P.* V.-c. 21. Whitchurch Common; *C.S.N.* Bedfont gravel pits; *A.W.W.* Scratch Wood, Edgwarebury, abundant; *B.W.* & *D.H.K.* Harefield; Ruislip; Staines; near Hampton Court, 1944-53; *D.H.K.* V.-c. 24. Denham, 1934; *P.H.C.* The var. *BALBISIANA* (Jord.) Wade is recorded from v.-c. 21, near Hampton Court; *D.H.K.* The var. *LLOYDI* (Corb.) Wade is reported from v.-c. 17. Banstead, 1927, *C.E.B.*; *Hb.L.* [A form with white corollas was found in v.-c. 17. Sandy field near Old Byfleet church, 1934, *J.E.L.*; *Hb.L.*—just outside the Area.]

LITHOSPERMUM L.

L. OFFICINALE L. *Gromwell.* Bushy places, wood borders and hedge-banks on the chalk. Local. V.-c. 16. Near Orpington; Romney Street; between Otford and Kemsing; *W.W.* Lullingstone Park, 1933, *P.H.C.*; *Hb.L.N.H.S.* Near Eynsford, 1934; *R.W.R.* N. of Brasted, 1935; *M.M.W.* V.-c. 17. Norbury Park, *P.H.C.*; *Hb.L.N.H.S.*; plentiful, 1947; *R.M.P.* Featherbed Lane, Farleigh, 1924; *J.E.L.*; Woodcote Park, Epsom, 1929, *E.C.W.*; chalkpit near Fairchilds, 1932, *J.E.L.*; *Hb.L.* Merstham, 1948, *R.M.P.* V.-c. 21. Yiewsley, 1910-14; Hackney Marshes, 1913; *J.E.C.*

BUGLOSSOIDES Moench.

B. PURPUROCAERULEA (L.) I. M. Johnston, *LITHOSPERMUM PURPUROCAERULEUM* L. *Blue Gromwell.* Alien. Europe, including parts of Britain. Naturalised in an orchard. Very rare. V.-c. 21. Old orchard, Pinner, no doubt originally planted but now naturalised, 1950; *T.G.C.*; 1951; *T.G.C.* & *D.H.K.* Believed extinct in the well-known old station in v.-c. 16.

B. ARVENSIS (L.) I. M. Johnston, *LITHOSPERMUM ARVENSE* L. *Corn Gromwell, Bastard Alkanet.* Cultivated ground and waysides. Rare, and often merely casual. V.-c. 16. W. of Eynsford, 1923; *W.W.*; 1946; *F.R.* Dartford, 1876, *F.J.H.*; *Hb.Mus.Brit.* Downe, 1935, *M.M.W.*; *Hb.R.*; cornfields, 1946; Swanscombe Wood; Shoreham; *F.R.* V.-c. 17. Arable fields near Betchworth railway station, 1923; *E.B.B.* Foot of downs, Oxted, 1924; *R.W.R.* Near Court Wood, Selsdon, 1926; Ham gravel pits, 1943, *J.E.L.*; *Hb.L.* Mizen's Market Garden, Ewell, 1942, *A.E.E.*; *Hb.E.C.M.* Wimbledon Common, casual, 1924 and 1926; *C.A.* V.-c. 18. Woodford Wells, casual, 1908; *C.L.C.* Dagenham Dock, 1927; *J.E.C.* Near Epping, 1952; *A.W.J.* V.-c. 19. Roydon, 1936; *P.H.C.* V.-c. 20. East End Green; *S.C.M.* V.-c. 21. Hornsey, 1887; Yiewsley, 1916; Harefield, 1920; Hackney Marshes, 1923; North Finchley, 1925; *J.E.C.* Hendon, 1912, *P.H.C.*; *Hb.L.N.H.S.* West Drayton, 1920; *P.H.C.*; 1940; canal path between Hanwell and Southall, one plant, 1948; *D.H.K.* Bombed site, Upper Thames Street, E.C., 1945; *J.E.L.*; *L.N.H.S. Excursion.* Canal path, Brentford, one plant, 1947; *N.Y.S.* & *D.H.K.*

ECHIUM L.

E. VULGARE L. *Viper's Bugloss*. Grassy places on dry soils, but mainly on the chalk. Local. V.-c. 16. Around Darenth and Mount's Woods, 1948-52; H.M.P. V.-c. 17. Weybridge, 1899, L.B.H.; Hb.H. Colley and Buckland Hills; Mickleham Downs; E.B.B. Box Hill, 1923, J.E.L.; Hb.L.; 1953; D.H.K. Downs above Oxted, 1917; R.W.R. Woldingham, 1936; Kingswood, 1939; P.H.C. Chipstead, 1950; B.W. Waste ground, Wimbledon Common, 1952; A.W.J. V.-c. 18. Chingford, 1905; J.O.B. Woodford Green, 1905; C.N. Chigwell, 1907; C.A. Hainault Forest, 1908; Stifford, 1913; Lea Bridge; Brentwood; P.H.C. Railway bank between Woodford and Chigwell, 1908; C.L.C.; Hb.L.N.H.S. V.-c. 20. Broxbourne, 1909; P.H.C. Chalkpit, Rickmansworth, 1927; L.N.H.S. *Excursion*. Radlett, 1941; J.B. V.-c. 21. Harefield, 1900, E.M.D.; Hb.L.N.H.S. Muswell Hill, 1903; Whetstone, 1906; East Finchley; Finchley, 1909; J.E.C. Railway bank, Golders Green, 1909, P.H.C.; Hb.L.N.H.S. Spoil bank over Scratch Wood railway tunnel, abundant, 1946-53; D.H.K. Bombed site, Cripplegate, E.C., 1952-53; M.A.R.S.S. A form with pale-pink flowers is recorded from v.-c. 17. Merstham, 1903; J.E.C.

CONVOLVULACEAE

CALYSTEGIA R. Br.

C. SEPIUM (L.) R. Br. *Bellbine, Large Bindweed*. Alder holts, and hedges and thickets in damp places, also as a persistent garden weed. Frequent in all the v.-cc. The var. AMERICANA (Sims) Hyl. is reported from v.-c. 17. Hedge by river Wey near West Weybridge, 1950; B.W. V.-c. 21. Near Staines Moor, 1947; B.W. Northwood; D.H.K.

C. SYLVESTRIS (Willd.) Roem. & Schult., C. INFLATA auct. *Largest Bindweed*. Alien. S.E. Europe. Naturalised in hedges and thickets, and established on waste ground and rubbish-tips, also a persistent garden weed. Frequent, throughout the area, and far more common than the preceding species. The forma ROSEA Hyl. is recorded from v.-c. 16. Plumstead Marshes, 1951, B.W., J.C.C. & J.E.L.; Hb.L. V.-c. 17. Roadside near Box Hill, 1942, J.E.L.; Hb.L. V.-c. 18. Railway banks, Leytonstone, 1951; D.H.K. V.-c. 21. Railway banks, West Hampstead, abundant, 1951-53; rubbish-tip, Hanwell, 1951; D.H.K. Grounds of Natural History Museum, South Kensington, 1951; E.B.Ba.

IPOMOEA L.

I. PURPUREA Roth. Trop. America. V.-c. 18. Rubbish-tip, Barking, 1953; J.E.L. V.-c. 21. Forecourt of Soya Foods Ltd., Springwell, 1945, B.W.; Hb.K.; 1946; D.H.K.

I. HEDERACEA Jacq. Alien. Trop. America. V.-c. 21. Under wall of Soya Foods Ltd., Springwell, 1945, J.E.L. & D.H.K.; Hb.K. & Hb.L.; 1946-48; D.H.K. The var. INTEGRIFOLIA Gray also occurred in 1945 teste J.E.L.; Hb.L.

I. LACUNOSA L. Alien. N. America. V.-c. 21. Forecourt of Soya Foods Ltd., Springwell, 1947, D.H.K.; Hb.K.

CONVOLVULUS L.

C. ARVENSIS L. *Small Bindweed, Cornbine.* Cultivated and waste ground, roadsides, railway banks, etc. Common throughout the area. The var. STONESTREETII Druce is reported from v.c. 17. Roadside, Purley Oaks railway station, 1950; R.M.P.

CUSCUTA L.

C. EUROPAEA L. *Large Dodder.* Parasitic on *Urtica dioica* and *Humulus Lupulus*, rarely on other species. Local and almost confined to the banks of the Thames, Mole and Wey. V.-c. 17. Between Thorpe and Egham, on *Urtica*, 1920; L.B.H. By river Mole near Leatherhead, on *Urtica*, 1934; R.W.R.; on *Tanacetum* and *Impatiens glandulifera*, 1952; L.N.H.S. *Excursion.* By river Mole, Leatherhead, 1929, J.E.L.; Hb.L. By river Mole below Norbury Park, 1934, P.H.C.; Hb.L.N.H.S. By river Mole, Paper Mill, Esher, 1942, A.E.E.; Hb.E.C.M. Abundant by river Mole near Betchworth, 1942; Thames bank by Chelsea Reservoirs, Molesey, 1942, J.E.L.; Hb.L. By river Mole, Burford Bridge, 1950; J.E.L. By towpath of river Thames, Ham, 1946; E.W.D. By the Thames, Hurst Park; between Kew and Richmond; J.E.L.; 1947; site destroyed by flood of March, 1949; B.W. By river Mole, Cobham, 1949, D.McC. & F.R.; 1950; L.N.H.S. *Excursion.* [Occurs at intervals along Mole and Wey just outside the area]. V.-c. 21. Penton Hook, on *Urtica*, 1917-19; J.E.C. Hedge between Shepperton and Chertsey Bridge, 1901, C.B.G.; Hb.S.L.B.I. Thames bank near Chertsey Bridge, on *Urtica*, 1942, J.E.L.; Hb.L.; 1944-53; D.H.K.

C. EPITHYMMUM (L.) Murr., including C. TRIFOLII Bab. *Common Dodder.* Parasitic on *Ulex*, *Calluna*, *Erica*, and various other heath plants. Locally plentiful. V.-c. 16. Pauls Cray and Hayes Commons; W.W. Keston Common, 1937; P.H.C.; 1946; F.R. Dartford Heath, 1933; P.H.C.; 1938; J.B.M.; 1948-50; H.M.P. Near Eynsford, 1930; R.W.R. Pilgrim's Way, Otford, 1952; H.M.P. V.-c. 17. Oxshott Heath, 1915; E.B.B.; 1944; P.H.C. Headley, 1898, C.S.N.; Hb.L.N.H.S. Worm's Heath, 1925; garden, South Drive, Banstead, 1931; near Fairchilds, Farleigh, 1941; Nore Hill, 1943, J.E.L.; Hb.L. Oxted Downs, 1930; R.W.R. Near Fetcham Downs, 1918; E.B.B. Limpsfield Common, 1917 and 1937; R.W.R. Chalky downs, Buckland, 1928, J.E.L.; Hb.L. Wimbledon Common, 1932-34; C.P.C.; 1947; E.B.Ba.; 1953; A.W.J. V.-c. 18. High Beach, on *Calluna*; J.O.B.

C. AUSTRALIS var. CESATIANA (Bertol.) Fiori & Paoletti. Alien. Mediterranean region. V.-c. 18. Rubbish-tip, Barking, parasitic on *Artemisia Verlotorum*, *Senecio squalidus*, *Polygonum aviculare*, etc., 1953; S.T.J. & B.T.W. det. J.F.S.* V.-c. 21. Parasitic on *Callistephus chinensis* in a garden, Enfield, 1953; J.M.† det. A.M. & J.F.S.

*Shillito, J. F.

†Maude, Miss J.

SOLANACEAE

LYCOPERSICON Mill

L. ESCULENTUM Mill. *Tomato*. Alien. S. America. Frequent on waste ground and rubbish-tips all over the area.

SOLANUM L.

S. DULCAMARA L. *Bittersweet*, *Woody Nightshade*. Hedges, woods, marshes and waste ground. Common in all the v.-cc. The var. VILLOSISIMUM Desv. is recorded from v.-c. 17. Banstead Downs, 1925, C.E.B.; Hb.B. V.-c. 21. Railway bank, West Drayton, 1947; D.H.K. White-flowered plants are recorded from v.-c. 17. Battersea Park, 1948; B.W. (cf. Fl. Surrey, 473). Towpath between Mortlake and Kew, 1942, J.E.L.; Hb.L. V.-c. 21. Chiswick, 1944; B.W. Cannon Place, Hampstead, 1949; E.B.Ba., H.C.H. & D.H.K.

S. NIGRUM L. *Black Nightshade*. Cultivated and waste ground, and as a garden weed. Common throughout the area. The var. OCHROLEUCUM Bast. is recorded from v.-c. 18. Dagenham Dump, 1934, J.E.L.; Hb.L., and the var. ATRIPLICIFOLIUM Dunal. is reported from v.-c. 18. Dagenham Dump, 1934, J.E.L.; Hb.L.

S. TUBEROSUM L. *Potato*. Alien. S. America. Common, as an outcast, on waste ground, rubbish-tips and bombed sites.

S. TRIFLORUM Nuttall. Alien. N. America. V.-c. 18. Rubbish-tip, Barking, 1953; B.W. & D.McC.

S. CAPSICASTRUM Schau. Alien. Brazil. V.-c. 21. Bombed site, Leather Lane, E.C., 1950; J.W.

S. SARRACHOIDES Sendtn., S. NITIDIBACCATUM Bitter. Alien. Central America. V.-c. 18. Dagenham, 1927, R.M.; Hb.L. Rainham, 1927; J.E.C. Rubbish-tip, Barking, 1953; B.T.W. V.-c. 21. Hackney Marshes, 1915; J.E.C. Forecourt of Soya Foods Ltd., Springwell, abundant, 1945, B.W.; Hb.K. & Hb.L.; 1946-49; D.H.K.

S. PSEUDOCAPSICUM L. *Jerusalem Cherry*. Alien. ? Old World. Established on a canal tow path. Very rare. V.-c. 21. Canal tow path between Hanwell and Southall, 1945, D.K., J.M.B.K. & D.H.K.; Hb.K. 1946-53, a large patch extending for about four yards; D.H.K.

PHYSALIS L.

P. ALKEKENGI L. *Winter Cherry*. Alien. Europe, etc. Garden escape. Established on waste ground and by roadsides. Not common. V.-c. 16. Waste land, Keston, 1945, P.H.C.; Hb.L.N.H.S. V.-c. 17. Roadside. Leatherhead, 1945, P.H.C.; Hb.L.N.H.S. V.-c. 21. Church End, Finchley, 1917, J.E.C.; Hb. Mus. Brit. Gravel pit near Shepperton, abundant, 1946; Chiswick; near Hammersmith Bridge, 1946-47; D.H.K. Waste ground, Hanwell, 1948; B.W.; abundant, 1949-53; D.H.K. Grounds of Natural History Museum, South Kensington, 1953; E.B.Ba. & D.H.K.

P. ANGULATA L. Alien. S. America. V.-c. 21. Forecourt of Soya Foods Ltd., Springwell, 1946, D.H.K.; Hb.K.

P. PUBESCENS L. Alien. N. America. V.-c. 18. Dagenham Dump, 1934, *J.E.L.*; *Hb.L.* V.-c. 21. Waste ground near Yiewsley, 1927, *R.M.*; rubbish-tip, Yiewsley, 1934, *J.E.L.*; *Hb.L.* Waste ground by canal, Northolt; *R.A.B.* det. at *Kew*. Rubbish-tip, Lower Feltham, 1951; *J.Ru.*, *B.W.* & *D.H.K.*

CAPSICUM L.

C. ANNUUM L. Alien. Tropics. V.-c. 18. Dagenham Dump, 1934; *J.E.L.*; *Hb.L.*

NICANDRA Adans.

N. PHYSALODES (L.) Gaertn. Alien. Peru. V.-c. 16. Erith, on spread ashes, about 10 plants, 1951, *B.W.*, *J.C.C.* & *J.E.L.*; *Hb.L.* V.-c. 17. Towpath between Richmond and Kew, on old potting soil from Kew Gardens, 1951; *B.W.* V.-c. 18. Rubbish-tip, Barking, 1953; *B.T.W.* V.-c. 21. Rubbish-tip, Hanwell, 1946, *D.H.K.*; *Hb.K.* & *Hb.L.* Forecourt of Soya Foods Ltd., Springwell, 1948; *J.P.M.B.* & *N.Y.S.*; *C.W.* & *D.H.K.*

LYCIUM L.

L. CHINENSE Mill. agg. *Duke of Argyll's Tea Tree*. Alien. Asia. Garden escape. Naturalised in hedges, and established on waste ground and railway banks. Not common. V.-c. 16. Hedges near Darenth, 1914; railway bank between Charlton and Westcombe Park, 1918; *E.B.B.* South Eden Park, Beckenham, 1919; *L.J.T.* Stone; Greenhithe; Dartford, 1948-51; *H.M.P.* V.-c. 17. Limpsfield, 1914; *E.B.B.* Norwood, 1933; Warlingham, 1935; Beddington Lane, Mitcham, 1937; *P.H.C.*; 1949; *J.B.E.* Ham Pits, 1946; *B.W.* V.-c. 18. Dagenham Dump, well established, 1934, *J.E.L.*; *Hb.L.* V.-c. 20. Near Essendon, 1920; *P.H.C.* Hatfield, 1921; *L.J.T.* V.-c. 21. Edmonton, 1926; *L.J.T.* West Drayton, 1936; *P.H.C.* Canal side between Uxbridge and Cowley; near Cowley Peachey; Yiewsley; Harefield; between Dawley and Hayes; near Osterley Park, 1939-50; *D.H.K.* Waste ground near Hounslow Heath, very abundant, 1947; *N.D.S.*, *N.Y.S.* & *D.H.K.* The segregate species are reported as follows:—*L. HALIMIFOLIUM* Mill. V.-c. 18. Rubbish tip, Barking, 1952; *B.W.* det. *A.M.* *L. CHINENSE* Mill. V.-c. 18. Purfleet, 1911, *P.H.C.*; *Hb.L.N.H.S.* det. *D.H.K.*

ATROPA L.

A. BELLA-DONNA L. *Deadly Nightshade, Dwale*. Woods and thickets on calcareous soils; naturalised near old buildings, on waste ground and in hedgerows on other soils. Local. V.-c. 16. Frequent on the chalk. V.-c. 17. Common on the chalk. On other soils:—By river Thames, Kew, 1945; *B.W.*; 1948; *R.A.B.*; 1950; crevices of old tombs, St. Anne's churchyard, Kew Green, 1950; *K.E.B.* Epsom College; *A.E.E.* Near Wimbledon Common, 1937; *C.A.*; *C.P.C.*; 1949-53; *A.W.J.* V.-c. 18. Garden weed, Chingford, 1908, *J.O.B.*; *Hb.L.N.H.S.* Rainham, 1927; *J.E.C.* Dagenham Dock, 1939; *P.H.C.* V.-c. 20. Cassiobury Park, 1898; *C.S.N.* Springwell; *D.H.K.* Rickmansworth, 1945; *R.W.H.* V.-c. 21. Crouch End, 1896; Harefield, 1908; *J.E.C.*; old chalk pits, common, 1938-53; *D.H.K.* Thames bank, Chiswick, 1938; *E.B.Ba.*; 1942; *B.W.*; 1946; *D.H.K.* North Hill, Highgate, 1901; *L.B.H.* Potters Bar; *L.J.J.* Grounds of West Middlesex County Hospital, and various other places about Isleworth, 1938-53; Syon House grounds,

1944-53; Springwell, frequent, 1945-53; *D.H.K.* Hampton Court, *C.B.G.*; *Hb.S.L.B.I.* Highgate Hospital grounds, 1949; *J.M.B.K.* Near Chelsea Hospital, 1943; *E.W.D.* Bombed site, Eaton Terrace, S.W.1, 1952, *R.L.B.* teste E.B.Ba.*

DATURA L.

D. STRAMONIUM L. *Thorn-apple.* Alien. Cosmopolitan. Occasionally established in waste places, and on cultivated ground, but usually only casual. Not common. V.-c. 16. Garden weed, Hayes Old Rectory, 1933-36; *D.McC.* Dartford; Cotton Lane, Stone, 1951; Darenth Wood, 1952; *H.M.P.* Rubbish-tip, Stone, one plant, 1948-51; *H.M.P.* V.-c. 17. Limpsfield, 1917; *R.W.R.* Allotment, Clapham, 1922, *J.E.L.*; waste land, Cheam, 1932, *E.C.W.*; Ham gravel pits, 1941; *J.E.L.*; *Hb.L.* Barnes Common, 1952; *M.M.† & B.W.* Burford Bridge, Mickleham, 1939; Carshalton, 1939, *A.E.E.*; Epsom, 1949, *J.W.P.*; *Hb.E.C.M.* Allotments, Walton-on-Thames, 1941; *J.E.L.* Leatherhead, 1944; *P.H.C.*; *Hb.L.N.H.S.* Near river Wandle, Mitcham, 1949; *J.B.E.* Wimbledon Common, 1935; *C.A.*; 1944; *B.W.* V.-c. 18. Rainham, 1927; *J.E.C.* Rubbish-tip, Barking, 1953; *B.T.W.* V.-c. 20. Hertford, 1921, *A.W.G.*; *Hb.L.* V.-c. 21. Watts Common, Harefield, 1902, *C.B.G.*; *Hb.S.L.B.I.* Cresswell Place, Chelsea, 1942-43; *E.W.D.* Rubbish-tips, Hanwell and Greenford, 1944-53; Northolt; Hackney Marshes, 1946; Marble Hill Park, Twickenham, 1948; *D.H.K.* Church End, Finchley, 1925-27; *J.E.C.* Hampton Court Park, 1926, *J.E.L.*; *Hb.L.*; 1940, *P.H.C.*; *Hb.L.N.H.S.* Ruislip Reservoir, 1949; *R.A.G.* Hampstead Heath, railway station, 1941; *J.B.* Garden weed, West Ealing, 1953; *D.H.K.* V.-c. 24. Denham, 1917; *L.B.H.* The var. *TATULA* (L.) Torrey is recorded from v.-c. 21. Yiewsley, 1913; *J.E.C.* Bombed site, Hornsey, 1947; *M.A.R.S.S.* Springwell, 1946; *J.E.L.* & *D.H.K.* Rubbish-tips, Hanwell and Greenford, 1944-53; *D.H.K.*

D. FEROX L. Alien. C. America. V.-c. 18. Rubbish-tip, Barking, 1953; *J.E.L.*, *B.T.W.*, *R.C.L.B.* & *R.A.G.*

HYOSCYAMUS L.

H. NIGER L. *Henbane.* Alien. Europe, including parts of Britain. Occasionally established on waste ground, arable land and roadsides, but often only casual. Not common. V.-c. 16. Near Dartford, 1930; *R.W.R.* Allotments by Watling Street, Stone, 1948; garden weed, Stone, 1952; *H.M.P.* V.-c. 17. Wimbledon Common, casual, 1924; *C.A.* Mitcham, 1930, *J.E.L.*; *Hb.L.* Thames bank, Kew, 1940; *P.H.C.* Near Richmond Station, 1950; *B.W.* Merstham chalkpit, 1943, *J.E.L.*; *Hb.L.* Leatherhead, 1946 and 1948-51; *J.E.S.D.* Wallington, 1945, *A.E.E.*; *Hb.E.C.M.* Betchworth, old chicken run, 1950-52; *B.M.C.M.* Bookham Common, 1951; *E.B.Ba.* Field border, Norbury Park, 1950; *J.E.L.* & *J.K.M.* V.-c. 18. Near Hale End, 1902; near King's Head Hill, 1905; *J.O.B.* Woodford Green, 1905; *C.N.* Grays, 1913; *P.H.C.* Rubbish-

*Bennett, R. L.

†Matthews, Miss M.

tip, Barking, 1953; *B.T.W.* V.-c. 21. Acton Green, 1905, *C.B.G.*; *Hb.S.L.B.I.* Neasden, 1908; Finchley, 1909-10 and 1923; Hackney Marshes, 1917; Hendon, 1929; Alperton, 1917; *J.E.C.*; 1918-21; *L.M.P.S.* Canal bank N. of Uxbridge, 1917; *L.J.T.* Allotments near Castle Bar, Ealing, 1935-36; *K.E.B.* Grounds of Ashford County Hospital, one plant, 1941; *J.K.H.* Shepperton, one plant, 1946; *A.W.W.*; 1948; *B.W.* Perry Oaks Sewage Farm, one plant, 1950; *R.S.R.F.* Hampton Court Park, 1926, *J.E.L.*; *Hb.L.*, 1937; *P.H.C.*, 1943; *B.W.* Rubbish-tip, Hounslow; *H.B.* Near Scratch Wood, Edgwarebury, 1946; *J.Si.* Canal side between Brentford and Hanwell, 1945-46; by Lea Navigation Canal, Tottenham Hale, 1947; *D.H.K.* Garden of St. Mark's College, Chelsea, 1944; *E.W.D.* Park Avenue, Ruislip, 1952; *R.A.G.* Finsbury Park, 1951; *M.A.R.S.S.* V.-c. 24. Near Iver, 1918; *J.E.C.* The var. *PALLIDUS* Waldst. & Kit. is recorded from v.-c. 21. Finsbury Park, 1952, *J.B.*; *Hb.K.* det. *D.H.K.*

NICOTIANA L.

N. RUSTICA L. Alien. Mexico. V.-c. 21. Rubbish-tip, Lower Feltham, 1950; *J.Ru.*, *B.W.* & *D.H.K.* Rubbish-tip, Greenford, 1953; *A.M.*, *E.B.Ba.*, *TG.C.* & *D.H.K.*

N. TABACUM L. *Tobacco*. Alien. S. America. V.-c. 16. Rubbish-tip, Downe, 1951, *D.P.Y.*; *B.S.B.I.* 1952 Year Book, 107. V.-c. 21. Waste land, Greenford, 1944 and 1953; waste land, Isle of Dogs, 1945; rubbish-tip, Hanwell, abundant, 1950; *D.H.K.*

SCROPHULARIACEAE

VERBASCUM L.

V. PHLOMOIDES L. Alien. Europe. Established on waste ground and rubbish-tips, and by roadsides. Rather common, and perhaps sometimes planted. V.-c. 16. Rubbish-tip, Sevenoaks, 1951; *D.McC.* V.-c. 17. Rubbish-tip, Mortlake, 1948; *D.H.K.* Allotment, Kew Green, 1947; Leatherhead By pass, ? planted; *B.W.* V.-c. 21. Roadside near Harrow, 1941-44; *H.W.Pa.* det. *D.H.K.* Bombed site, Fore Street, E.C., 1945; *J.E.L.* Waste ground, Staines and Penton Hook; rubbish-tips, Hounslow Heath, Northolt, Stonebridge, Chiswick and Hanwell, 1946-53; *D.H.K.* The var. *ALBIFLORA* (Rouy) Wilmott is recorded from v.-c. 21. Rubbish-tip, Northolt, 1946-53; rubbish-tip, Hanwell, 1953; *D.H.K.*

×*THAPSUS*. V.-c. 21. Hounslow Heath, 1950; *A.W.W.*, conf. *J.E.L.*; 1951; *B.W.*

V. THAPSUS L. *Aaron's Rod*. Banks, waste ground and roadsides. Common in all the v.-cc. except 19 where it is so far unrecorded. Particularly frequent on the chalk.

V. VIRGATUM Stokes. *Twiggy Mullein*. Alien. Europe, including parts of Britain. Established on waste ground and rubbish-tips, and by roadsides. Rare. V.-c. 17. Rough field above Oxted chalkpit, 1943, *J.E.L.*; *Hb.L.* V.-c. 18. Roadside near Dagenham Dock, 1936, *J.E.L.*; *Hb.L.* V.-c. 21. Hanworth Road, Hounslow, 1948-50; rubbish-tip,

Hounslow Heath, 1948-53; A.W.W. Waste ground, Golders Green, 1921; P.W.R.

V. BLATTARIA L. *Moth Mullein*. Alien. Europe. Established in waste places. Rare. V.-c. 21. By river Thames, Chiswick, 1945; J.E.L.; rubbish-tip, Northolt, casual, 1947; D.H.K. Gravel pit, East Bedfont, 1950; B.W., J.G.D. & D.H.K.

V. LYCHNITIS var. ALBUM (Mill.) Druce. *White Mullein*. Wood borders, grassy places and banks, almost confined to the chalk. Locally common. V.-c. 16. Frequent on the chalk. V.-c. 17. Worm's Heath, scarce, 1919; R.W.R.; 1922, J.E.L.; Hb.L. Riddlesdown, 1922; railway bank near Warlingham, 1927; R.W.R. Downs near Addington, 1902; C.S.N.; Crohamhurst, 1940, three plants, P.H.C.; Hb.L.N.H.S. Farthing Downs, 1933; C.L.C. Wood between Caterham and Addington, 1883, F.J.H.; Hb.Mus.Brit. Below Devil's Den Wood, Coulsdon, 1924, J.E.L.; on bare chalk where defence ditch had been filled in, Chipstead Valley, 1950, J.E.L. & C.T.P.; Hb.L. V.-c. 21. Near White Lodge, Bushy Park, 1950; D.H.K.

\times NIGRUM = V. \times SCHIEDEANUM Koch. V.-c. 17. Wood between Caterham and Addington, 1883, F.J.H.; Hb.Mus.Brit. Woldingham, 1922, J.E.L.; Hb.L.

\times THAPSUS = V. \times THAPSI L. V.-c. 16. Near St. Mary Cray railway station, 1944; R.W.H., F.R. & J.E.L.; Hb.L. Bickley, 1946; F.R. Near Darenth Wood, 1948-50; H.M.P.

V. NIGRUM L. *Dark Mullein*. Waysides, banks and open habitats on dry soils. Locally plentiful. V.-c. 16. Crayford, 1910; J.E.C. N. of Darenth; Green Street Green, near Darenth, 1948; Green Street Green, near Farnborough, 1951; D.McC. V.-c. 17. Frequent on the chalk:—on other soils—Oxshott Heath, 1951; R.A.B. Wimbledon Common, 1947; W.M.; 1950-51; A.W.J. By Thames near Kew, 1944; B.W.; 1948; Hammersmith Reservoirs, several plants, 1948; R.A.B. V.-c. 20. Great Amwell, 1908, P.H.C.; Hb.L.N.H.S. Hertingfordbury, 1920; P.H.C. Near Radlett, 1941; J.B. Near Springwell; Rickmansworth, 1944-53; D.H.K. Near Ware, 1953; L.M.P.S. V.-c. 21. St. Margaret's, 1908; P.H.C. Near Alperton, 1917-21; L.M.P.S. Drayton Ford; Garett Wood; gravel pit between Harefield and Ickenham; near Hampton Court, 1945-48; D.H.K. Grounds of Ashford County Hospital; J.K.H. Bombed sites, Cripplegate, E.C., in two places, 1952; A.W.J.

\times THAPSUS = V. \times SEMIALBUM Chaub. V.-c. 17. Headley Heath, 1944; Box Hill (on edge of area), 1942, J.E.L.; Hb.L.

ALONSOA Ruiz & Pav.

A. PEDUNCULARIS (Kunze) Wetst. Alien. S. America. V.-c. 21. Finchley, 1909; J.E.C.; Hb.Mus.Brit.

LINARIA Mill.

L. VULGARIS Mill. *Yellow Toadflax*. Grassy places, banks, railway tracks, waysides and waste places. Common in all the v.-cc. Peloric forms are recorded from v.-c. 17. Mitcham, 1934, *H.J.B.*; *Hb.L.N.H.S.* V.-c. 21. Baber Bridge, Hounslow Heath, 1945; *A.W.W.*

L. PURPUREA (L.) Mill. *Purple Toadflax*. Alien. S. Europe. Garden escape. Established on old walls, and in waste places. Rather common. V.-c. 16. Bombed site, Bromley, 1946, *P.H.C.*; *Hb.L.N.H.S.* Rubbish-tip, Sevenoaks, 1951; *D.McC.* V.-c. 17. Walls, Limpsfield churchyard, 1921; *R.W.R.*; well established, 1938, *P.H.C.*; *Hb.L.N.H.S.* Wimbledon Common, 1942; *C.A.* Betchworth, 1951; *K.E.B.* Oxted, 1950; *A.W.J.* Ham gravel pits, 1952; *J.B.M.* V.-c. 21. Bombed site, Eastcheap, 1944, *L.J.J.*; *Hb.L.* City bombed sites, locally plentiful from 1944 onwards; *J.E.L.* Walls of Pinner church and churchyard, established, 1945; bombed sites, Ealing, 1945; rubbish-tips, Hanwell, Greenford, Hounslow Heath and Stonebridge, 1944-53; *D.H.K.* Waste ground, Park Royal, 1951; *L.C.* teste A.W.J.*

L. REPENS (L.) Mill. *Pale Toadflax*. Dry stony fields, banks and waste places, mainly on calcareous soils, also on railway tracks. Local. V.-c. 16. Near Romney Street, 1933, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 17. Buckland, 1926, *J.E.L.*; *Hb.L.* Park downs, Banstead, a small patch on chalk scrubland, *J.G.M. teste D.P.Y.*; *Watsonia*, 1, 254. Border of chalky cornfield W. of Pebblecombe Road, 1948; *J.E.S.D.*; 1952; *A.E.E.* Betchworth, 1951; *K.E.B.*; 1950-51; *E.M.C.I.* W. of Reigate, foot of Buckland Hills, 1953; *P.G.* V.-c. 21. Waste ground by canal, Greenford Green, introduced with chalk-ballast, 1947; railway sidings near West Drayton, 1951, *D.H.K.*; *Hb.K.* Hounslow, 1950; *H.B.* A white-flowered form is reported from v.-c. 17. Betchworth, 1951; *K.E.B.*

L. DALMATICA (L.) Mill. Alien. Dalmatia. V.-c. 17. Railway bank, Caterham, 1952, *B.M.C.M.*; *Hb.Mus.Brit.*; 1953; *B.M.C.M. & B.W.*

L. ANGUSTISSIMA (Lois.) Borbás, **L. ITALICA** Trev. Alien. S. Europe. V.-c. 17. Corn-field near Headley, 1935, *H.J.B.*; *Hb.L.N.H.S.* det. *C.E.B.*

L. MAROCCANA Hook. f. Alien. Morocco. Garden outcast. V.-c. 18. Rubbish-tip, Barking, 1953, *B.T.W.*

CHAENORHINUM (DC.) Reichb.

C. MINUS (L.) Lange, **LINARIA MINOR** (L.) Desf. *Small Toadflax*. Cultivated and waste ground, waysides and railway tracks. Rather common. V.-c. 16. Eden Park, near Beckenham, 1917; *P.H.C.* Stone, 1948-51; *H.M.P.* V.-c. 17. Frequent. V.-c. 18. Wood Hatch, 1910, *P.H.C.*; *Hb.L.N.H.S.* Ongar railway station, 1952; *B.T.W. & J.E.L.* V.-c. 20. Park Street, 1912, *P.H.C.*; *Hb.L.N.H.S.* London Colney, 1942; *J.B.* Railway track, Bricket Wood, 1947; *R.M.P.* V.-c. 21. Harefield; *C.S.N.*; 1953; *D.H.K.* Potters Bar; *P.H.C.* Uxbridge Moor,

*Corbett, Mrs. L.

very abundant; Springwell; Staines and Stanwell Moors; railway tracks, Ealing Broadway, abundant; railway tracks, Uxbridge to Denham, frequent, 1944-53; D.H.K. South Ruislip; F.E.W. Railway tracks, Yeoveney; B.W. & D.H.K. Rubbish-tip, Hanwell, 1947; N.Y.S. & D.H.K. V.-c. 24. Railway tracks, Denham, 1951; D.H.K.

C. ORGANIFOLIUM (L.) Fourr., LINARIA ORGANIFOLIA (L.) DC. Alien. S. Europe. V.-c. 17. Bomb-crater, Brockham Hill, 1948, J.E.L.; Hb.L.; 1949; J.E.L.

KICKXIA Dum.

K. SPURIA (L.) Dum., LINARIA SPURIA (L.) Mill. Cultivated ground, on light soils. Local. V.-c. 16. Chislehurst Common; W.W. Field near Darenth Wood, abundant, 1951; H.M.P. Bromley, 1946, P.H.C.; Hb.L.N.H.S. V.-c. 17. Common on the chalk; on other soils:—Wimbledon Common, 1940; C.P.C. V.-c. 18. Stapleford Tawney; Theydon Garnon; P.H.C. Hare Street, Romford, 1913, P.H.C.; Hb.L.N.H.S. V.-c. 20. North Mimms, 1897, F.E.M.; Hb.L.N.H.S. Hertford Heath; S.C.M. V.-c. 21. Harefield, 1922; J.E.C.; 1944; Cowley, 1946; Shepperton, 1947; D.H.K. V.-c. 24. Colnbrook, 1909, P.H.C.; Hb.L.N.H.S.

K. ELATINE (L.) Dum., LINARIA ELATINE (L.) Mill. In similar habitats to the preceding species. Local. V.-c. 16. Field near Darenth Wood, 1951-52; H.M.P. Near Shoreham, 1953; A.W.J. V.-c. 17. Frequent on the chalk. V.-c. 18. Stapleford Tawney; Noak Hill, 1905; Abridge, 1908; Hare Street, Romford, 1913; P.H.C. Woodhatch, 1909, C.S.N.; Hainault Forest, 1908, A.B.H.; Hb.L.N.H.S. V.-c. 20. Hertford Heath; S.C.M. V.-c. 21. Harefield, 1907; J.E.C.; 1944; D.H.K. Ruislip Common, 1908; C.B.G. Roadside between New Years Green and Harefield, 1922; L.J.T. V.-c. 24. Fields, Rowley Farm, near Iver, 1931; J.C.R.

CYMBALARIA Hill

C. MURALIS Gaertn., Mey. & Scherb., LINARIA CYMBALARIA (L.) Mill. Ivy-leaved Toadflax. Alien. S. Europe. Established on old walls. Frequent in all the v.-cc.

ANTIRRHINUM L.

A. MAJUS L. *Snapdragon*. Alien. Mediterranean region. Garden escape. Established on old walls, chalky railway cuttings, chalkpits and waste ground. Rather common. V.-c. 16. Wall at Hayes, 1917; railway cuttings, Orpington and Chelsfield; P.H.C.; 1943-53; railway cuttings, Knockholt, 1943-53; D.H.K. Common in chalkpits and railway cuttings about Greenhithe, 1939-53; J.E.L. V.-c. 17. Railway cutting near Clapham Junction, 1914; E.B.B. Railway cutting between Sutton and Carshalton; R.W.R. V.-c. 18. Railway cutting, Purfleet, 1935; P.H.C. V.-c. 20. Old walls, Rickmansworth, 1953; D.H.K. V.-c. 21. Walls at Uxbridge, Cowley, Bushey Heath, Laleham, Harmondsworth, Isleworth, Twickenham, Stanmore, Harrow and Chiswick, 1939-53; D.H.K. Chalkpits, Harefield, 1944-53, D.H.K.; Hb.K. Rubbish-

tips, Hanwell, Greenford, Stonebridge and Hendon, 1944-53; *D.H.K.* Wall of Highgate Cemetery, 1945; *R.S.R.F.* Bombed sites, City, frequent; *J.E.L.*

MISOPATES Raf.

M. ORONTIUM (L.) Raf., **ANTIRRHINUM ORONTIUM** L. *Weasel's Snout, Lesser Snapdragon.* Cultivated ground on light soils. Local and rare. V.-c. 16. Holwood Park; *W.W.* V.-c. 17. Cornfield bordering Farthing Downs, 1915, *J.E.W.*; *Hb.L.* Near Oxted, scarce in sandy fields, 1917; *R.W.R.* Putney Heath, casual, 1936; *C.A.* [Frequent in sandy fields, etc., about Byfleet—just outside the Area.] V.-c. 21. Stanwell Moor, 1913; *J.E.C.* Grounds of Ashford County Hospital, 1939-45; *J.K.H.* Grounds of National Physical Laboratory, Teddington, 1949; *D.P.Y.* V.-c. 24. Iver Heath, 1912, *P.H.C.*; *Hb.L.N.H.S.*

SCROPHULARIA L.

S. VERNALIS L. *Yellow Figwort.* Alien. Europe. Naturalised in plantations and waste places. Rare. V.-c. 17. Kew Gardens, weed, 1927; *L.N.H.S. Excursion.* Epsom College, 1934, *A.E.E.*; *Hb.E.C.M.*; persisted until about 1939; *A.E.E.* Wimbledon Common, 1943; *C.A.* V.-c. 20. Hatfield Park, 1950; *P.F.V.*

S. AQUATICA L. *Water Figwort, Water Betony.* Pond verges, stream and river sides, wet woods and meadows. Common throughout the area. The plant also occurs on dry chalk wood borders at Box Hill and elsewhere in v.-c. 17. The var. **APPENDICULATA** Mérat is recorded from v.-c. 21. Uxbridge; canal side between Hanwell and Brentford; *D.H.K.*

S. UMBROSA Dum., **S. EHRHARTI** Stevens, **S. ALATA** Gilib. Streamsides. Very rare. V.-c. 17. E. bank of river Mole near Norbury Park, 1934; *R.W.R.*

S. NODOSA L. *Common or Knotted Figwort.* Damp woods, hedge-banks and waste ground. Common in all the v.-cc.

MIMULUS L.

M. GUTTATUS DC., **M. LUTEUS** auct. angl. p.p., **M. LANGSDORFFII** Greene. *Monkey-flower.* Alien. N. America. Garden escape. Naturalised by stream- and river-sides. Local. V.-c. 16. Westerham, 1921; *R.W.R.*; 1937, *P.H.C.*; *Hb.L.N.H.S.* By river Cray, Bexley; Stone Marshes, 1948-50; *H.M.P.* V.-c. 17. Near Weybridge, 1899, *L.B.H.*; *Hb.H.*; 1913; *J.E.C.*; 1917; *E.B.B.* By river Wandle near Hackbridge, 1917; *P.H.C.*; 1919; *L.J.T.* Moorhouse, near Limpsfield, 1917; Limpsfield, 1929 (deliberately introduced here in 1923); *R.W.R.* Near Reigate, 1923, *J.E.L.*; *Hb.L.* Oxted Mill, 1937; *J.B.E.* V.-c. 20. Between Daw's Hill and Ponders End, abundant, 1905; *J.O.B.* Near Cheshunt; *C.N.*; 1907; *J.E.C.* Broxbourne, 1894; *J.E.C.*; 1906, *R.W.R.*; 1953; *S.C.M.* Rye House, 1909, *P.H.C.*; *Hb.L.N.H.S.* Essendonbury, 1920; Park Street; *P.H.C.* Rickmansworth, 1911; Croxley Mills; *C.S.N.*

V.-c. 21. Uxbridge; *L.B.H.* Staines, 1908; West Drayton; *P.H.C.*; 1938; *D.H.K.* Ponders End, 1920; *J.E.C.* By canal, Harefield, 1945; *B.W.*; 1950; *D.H.K.* V.-c. 24. Iver, 1909, *P.H.C.*; *Hb.L.N.H.S.* Denham; *P.H.C.*; 1922; *J.E.C.*

M. MOSCHATUS Lindl. *Musk.* Alien. N. America. Garden escape. Naturalised by lakes and ponds. Very rare. V.-c. 17. Richmond Park; *T.A.D.* V.-c. 21. Head of lake, Ken Wood, 1949; *H.C.H.*; 1950-53; *D.H.K.*

[**LIMOSELLA** L.]

L. AQUATICA L. *Mudwort.* This rare species has not been reported from the Area by our members, but there are old records from v.-c. 17, and it should be searched for on muddy pond verges, particularly in the Esher district.]

DIGITALIS L.

D. PURPUREA L. *Foxglove.* Open woods, heaths and dry hedgebanks. Common in all the v.-cc. except 19, where though unrecorded it is almost certain to occur.

D. GRANDIFLORA Mill., **D. AMBIGUA** Murr. Alien. Europe. V.-c. 17. Bomb-crater, Brockham Hill, 1948, *J.E.L.*; *Hb.L.*; 1949; *J.E.L.*

D. LUTEA L. Alien. Europe. V.-c. 17. Bomb-crater, Brockham Hill, 1948, *J.E.L.*; *Hb.L.*; 1949; *J.E.L.*

D. LANATA Ehrh. Alien. S.E. Europe. Naturalised on field-borders. Rare. V.-c. 16. Neglected field near Dartford, 1947, *J.E.L.*, *R.L.* & *D.H.K.*; *Hb.L.*; *L.N.H.S.* *Excursion.* Cornfield, Temple Hill, Dartford, field formerly used by Burroughs Wellcome, and species probably grown as a crop, 1951; *H.M.P.* Dartford, 1952; *F.A.S.** det. *J.E.L.* V.-c. 17. Bomb-crater, Brockham Hill, 1948, *J.E.L.*; *Hb.L.* Mickleham Downs; *J.E.L.*

D. FERRUGINEA L. Alien. Europe. V.-c. 17. Bomb-crater, Brockham Hill, 1948, *J.E.L.*; *Hb.L.*; 1949; *J.E.L.*

VERONICA L.

V. OFFICINALIS L. *Common Speedwell.* Heaths, open woods and grassy places on dry soils. Common throughout the area. White-flowered plants are recorded from v.-c. 17. Chipstead; *W.W.*

V. CHAMAEDRYS L. *Germander Speedwell.* Grassy places, woods, banks, cultivated and waste ground. Very common in all the v.-cc.

V. MONTANA L. *Wood Speedwell.* Damp woods. Local. V.-c. 16. Near Southfleet, 1919; Abbey Wood, 1931; *P.H.C.* Crofton Court, 1924; near Brasted, 1913; *E.B.B.*; 1935; *M.M.W.* Wood W. of Sutton-at-

*Swain, F. A.

Little Heath, Oxshott, 1925; Nower Wood, Headley; Buckland Hills, 1919; above Limpsfield; Limpsfield, 1917; *E.B.B.*; 1937, *P.H.C.*; *Hb.L.N.H.S.* Shirley, 1922; wood near Farthing Downs, 1934; near Woldingham, local, 1921; *R.W.R.* Wimbledon Common, 1934; *C.A.*; 1943, *J.E.L.*; *Hb.L.* & *Hb.L.N.H.S.* Petersham Wood, 1945; *B.W.* Path from High Ashurst to Headley Lane, 1951; *P.F.Y.* det. *S.M.W.* Epsom Downs, 1935, *E.P.*; *Hb.E.C.M.* Marden Park, 1949; *R.M.P.* Bookham Common, 1950; *E.B.Ba.* V.-c. 18. Woodredon Hill, 1900, *R.W.R.*; 1910, *P.H.C.*; *Hb.L.N.H.S.* Ongar Park Wood, 1925; *L.J.T.* V.-c. 19. Epping Lower Forest, 1909, *V.R.C.*; *Hb.L.N.H.S.*; 1951; *R.M.P.* V.-c. 20. Beaumont Manor, 1909; *V.R.C.* Broxbourne, 1910, *P.H.C.*; *Hb.L.N.H.S.* North Mimms, 1930; Shenley; *P.H.C.* Panshanger, 1952; *R.M.P.* V.-c. 21. Highgate Woods, 1896-1900; *J.E.C.* Queen's Wood, Highgate, 1902; *L.B.H.* Harefield; Springwell, 1944-53; *D.H.K.* Scratch Wood, Edgwarebury, 1946; *B.W.* & *D.H.K.* White-webbs Park, Enfield, 1945; *L.J.J.*; 1952; *L.M.P.S.*

V. SCUTELLATA L. *Marsh Speedwell.* Pond-sides, bogs and wet meadows. Local. V.-c 16. Chislehurst Common; *W.W.* Keston Bog, 1921; *E.B.B.* V.-c. 17. Oxshott, 1899, *L.B.H.*; *Hb.H.* Meadows by river Wey, near Weybridge, 1917; Banks Common, 1919; *E.B.B.* Limpsfield, scarce, 1921; *R.W.R.* Pond near Epsom, 1925, *J.E.L.*; Headley Heath, 1926, *E.C.W.*; *Hb.L.* Mitcham Common, 1926, *D.G.C.*; 1930, *J.E.L.*; *Hb.L.*; 1941, *P.H.C.*; *Hb.L.N.H.S.*; 1950-51; *J.D.L.* Richmond Park; Ham Common, scarce, 1933; *C.A.*; 1945; *B.W.* Stew Ponds, Epsom Common, 1951; *J.E.S.D.* Bookham Common, 1949; *E.B.Ba.* V.-c. 18. Bentley; *P.H.C.* Epping Forest, near the "Rising Sun", *R.W.R.*; *L.N.H.S.* 1915 *Trans.*, 44 (1916). Wake Valley Pond, 1935; *J.R.*; 1951; *L.N.H.S.* *Excursion.* Walthamstow Reservoirs, 1951; *J.B.* V.-c. 20. Broxbourne; Wormley West End, 1904, *C.S.N.*; Bricket Wood, 1910, *P.H.C.*; *Hb.L.N.H.S.* Aldenham Reservoir, 1942; *J.B.* V.-c. 21. West Drayton; Whitchurch; *P.H.C.* Stanmore Common, 1898, *E.M.D.*; *Hb.L.N.H.S.*; 1928, *J.E.L.*; *Hb.L.*; 1938; *J.B.E.*; 1944-53; *D.H.K.* Ruislip Reservoir, 1919; *E.B.B.*; 1950; *D.H.K.* Finchley Common, 1901; *C.S.N.*; 1917-20; *J.E.C.* Harefield; Uxbridge Moor; Shortwood Common; Staines Moor, 1944-53; *D.H.K.* The f. *VILLOSA* Schum. is recorded from v.-c. 17. West End Common, Esher, 1925; *H.J.B.* Headley Heath, 1926, *E.C.W.*; *Hb.L.*

V. BECCABUNGA L. *Brocklime.* Brooks, streams, ponds, marshes and wet meadows. Common in all the v.-cc.

V. ANAGALLIS-AQUATICA L. agg. *Water Speedwell.* Ponds, streams, marshes, wet meadows and wet mud. Local. V.-c. 16. South End, Bromley; *W.W.* Near Southfleet, 1919; Dartford Marsh, 1933; *P.H.C.* Lullingstone, *F.J.H.*; *Fl. Kent*, 262. Stone Marshes and Darenth, 1948-51; *H.M.P.* V.-c. 17. Redhill, scarce, 1923; *R.W.R.* V.-c. 18. Theydon; Hainault, 1913; *P.H.C.* V.-c. 20. Park Street; Wormley; Essendon; *P.H.C.* Broxbourne; *R.W.R.* V.-c. 21. Uxbridge; *L.B.H.*

Hone, 1951; *F.R.* Mount's Wood, Swanscombe, 1952; *H.M.P.* V.-c. 17. Harlington; Ickenham; *P.H.C.* V.-c. 24. Near Horton; *C.S.N.* N.W. of Uxbridge, 1922; *L.J.T.*

V. ANAGALLIS-AQUATICA L. *Water Speedwell.* In the same situations as the aggregate species. Local. V.-c. 17. Barron's Pond, Epsom, 1928, *J.E.L.*; *Hb.L.* By Thames between Kew and Richmond, 1938; *E.B.Ba.* V.-c. 21. Springwell, 1947, *B.W.*; Uxbridge Moor, 1948, *D.H.K.*; *Hb.K.*, both det. *J.H.B.*

×CATENATA. V.-c. 16. Stone Marshes, 1939, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 20. Margin of river Lea, Rye House, 1909, *P.H.C.*; *Hb.L.N.H.S.*, both det. *J.H.B.*

V. CATENATA Pennell, *V. AQUATICA* Bernh., non S. F. Gray, *V. COMOSA* auct. *Water Speedwell.* In similar situations to the previous species, with which it often grows. Local. V.-c. 17. Near Epsom, 1925 and 1928; Fetcham Millpond, 1944, *J.E.L.*; *Hb.L.* V.-c. 21. Shortwood Common, Staines, 1947, *B.W.*; *Hb.K.* det. *J.H.B.*; 1950-53; Staines and Stanwell Moors, 1950; *D.H.K.* det. *J.H.B.*

V. SERPYLLIFOLIA L. *Thyme-leaved Speedwell.* Grassy places, heaths, banks, waste ground and as a garden weed. Common throughout the area.

V. ARVENTIS L. *Wall Speedwell.* Cultivated ground, heaths, grassy places and walls. Common in all the v.-cc. The small forms (cf. var. *NANA* Poir.) which grow on Reigate Heath, Mitcham Common, etc., differ so much in size and appearance from well-grown plants of cultivated land that they often prove puzzling to beginners.

[*V. TRIPHYLLOS* L. *Fingered Speedwell.* Occurs just outside the area in v.-c. 17. Sandy field near Old Byfleet Church, 1932 and 1934, *J.E.L.*; *Hb.L.*; quite 100 plants, 1952; *B.M.C.M.*]

V. PERSICA Poir., *V. TOURNEFORTII* C. C. Gmel. p.p., *V. BUXBAUMII* Ten., non Schmidt. *Buxbaum's Speedwell.* Alien. Europe. Thoroughly established on cultivated ground. Very common throughout the area. The var. *CORRENSIANA* (Lehm.) C. E. Britton is reported from v.-c. 17. Hook; Ashtead, 1928, *C.E.B.*; *Hb.L.*

V. AGRESTIS L. *Field Speedwell.* Cultivated ground. Local. V.-c. 16. Near Southfleet, 1919; *P.H.C.* V.-c. 17. Bookham Common, 1953; *A.W.J.* Limpsfield, scarce, 1924; *R.W.R.* Addington, 1940, *A.L.S.*; *Hb.L.* Morden, 1950; *R.A.G.* V.-c. 18. Warley; *R.W.R.* Loughton, garden weed, 1952; *R.M.P.* V.-c. 21. Denham; Harefield, frequent; Harmondsworth; Hadley; Hanwell; allotments, West Ealing; Ruislip Reservoir, 1944-52; waste ground, Fulham, casual, 1947; *D.H.K.* Garden weed, Mill Hill, 1952, *D.N.H.* teste N.Y.S.* V.-c. 24. Between

*Harrison, D. N.

Black Park and Denham, 1950; *D.H.K.* The var. *GARCKIANA* P. Fourn. is recorded from v.-c. 17. New Malden, 1928, *C.E.B.*; *Hb.L.*

V. POLITA Fries, *V. DIDYMA* auct. *Grey Speedwell.* Cultivated ground. Rather common. V.-c. 16. St. Pauls Cray; West Wickham; Dartford; Leaves Green, 1917; *P.H.C.* Between Bromley and Hayes; *L.J.T.* V.-c. 17. Near Thorpe, 1917; *E.B.B.* Merstham, 1918; Norbury Park, 1923; *L.J.T.* Limpsfield, 1922; *R.W.R.* Hallelu Valley, 1925, *J.E.L.*; *Hb.L.* White Hill, Caterham, 1948; *R.M.P.* V.-c. 18. Hale End, 1904, *R.W.R.*; *Hb.L.N.H.S.* Brentwood; Chigwell; Orsett; *P.H.C.* V.-c. 19. Roydon; *P.H.C.* V.-c. 20. Watford; *C.S.N.* Northaw; Bushey: Shenley, 1909; *P.H.C.* V.-c. 21. Uxbridge; Hayes; Southgate; *P.H.C.* Hendon, 1909, *P.H.C.*; *Hb.L.N.H.S.* Harefield; Uxbridge; Cranford; Colney Hatch, 1944-53; *D.H.K.* Hampton Court; *B.W.* Church End, Finchley, 1931, *J.E.L.*; *Hb.L.* The var. *THELLUNGIANA* (Lehm.) Hayek is recorded from v.-c. 17. Ashtead; Walton-on-the-Hill, 1927, *C.E.B.*; *Hb.L.*

V. HEDERIFOLIA L. *Ivy-leaved Speedwell.* Cultivated ground. Frequent in all the v.-cc.

V. LONGIFOLIA L. Alien. Europe. Garden escape. Established on waste ground and in grassy places. Not common. V.-c. 16. Brasted, 1945, *P.H.C.*; *Hb.L.N.H.S.* det. *D.H.K.* V.-c. 17. Walton Common, well established, 1953; *R.A.B.* det. *J.E.L.* Bookham Common, 1953, *A.W.J.* V.-c. 21. Finchley Common, 1946; waste ground, Hanwell, well established, 1953, *D.H.K.*; *Hb.K.*

V. AUSTRIACA ssp. *JACQUINI* (Baumg.) Watzl. Alien. Europe. V.-c. 21. Rubbish-tip, Ruislip, 1947, *Mrs. Moody*; *Hb.L.*

V. FILIFORMIS Sm. Alien. Caucasus. Garden escape. Naturalised in grassy places. Not common, but increasing. V.-c. 16. Otford, 1953; *N.L.K.** V.-c. 17. Roadside bank near Ockham, 1933; *A.H.C.*; *Hb.L.* Reigate Heath, 1952; *R.A.B.*; 1953; *B.W.* Bookham Common, 1953; *E.B.Ba.* The Glade, Fetcham, 1953; *A.H.N.* By River Mole, Norbury Park, 1953; *P.C.H.†* Rubbish-tip, Leatherhead, 1953; *L.N.H.S. Excursion.* Richmond Park, 1945-50; *B.W.* Roadside, Marden Park, Woldingham, 1954, *P.G.* teste *E.B.Ba.* V.-c. 21. Garden weed, Harrow. *G.H.L.*; *B.E.C.* 1946-47 Rep., 305 (1948). Road bank, Northwood, 1952; *R.A.G.*

HEBE Commers.

H. SPECIOSA (A. Cunn.) Andersen, *VERONICA SPECIOSA* A. Cunn. Alien. New Zealand. Garden escape. V.-c. 17. Limpsfield Common, *R.W.R.*; *Lond. Nat.*, 19, 70 (1939).

*Kimmings, N. L.

†Hall, P. C.

EUPHRASIA L.

The late H. W. Pugsley kindly examined many specimens in this critical genus.

[*E. STRICTA* Host. Erroneously recorded for v.-c. 17. Reigate Hill, by C.S.N. in *Botanical Records of the London Area* (1934). The plant does not occur in Britain. A specimen named "E. STRICTA" from Reigate Hill, in *Hb.R.*, is *E. NEMOROSA*, det. *D.H.K.*]

E. BREVIPILA Burnat & Greml. *Eyebright*. Meadows and pastures. Very rare. V.-c. 17. Limpsfield Common, 1938; *R.W.R.*

E. NEMOROSA (Pers.) Mart. *Eyebright*. Woods, downs, heaths and pastures. Local. V.-c. 16. Near Shoreham, 1929; *J.C.R.* det. *R.W.R.* V.-c. 17. Limpsfield Common, 1938; *R.W.R.* Caterham, 1942; South Hawke, 1943, *J.E.L.*; *Hb.L.*, both teste *H.W.P.* Reigate Hill, *R.W.R.*; *Hb.R.* det. *D.H.K.* V.-c. 19. Great Parndon, 1913, *P.H.C.*; *Hb.L.N.H.S.* det. *D.H.K.* V.-c. 20. Panshanger, 1953, *T.G.C.* & *D.H.K.*; *Hb.K.* V.-c. 21. Harefield, 1900, *C.S.N.*; *Hb.L.N.H.S.* det. *D.H.K.*; 1913, *J.E.C.*; *Hb.Mus.Brit.*; 1945; Springwell, 1945, *D.H.K.*; *Hb.K.*, both conf. *H.W.P.* V.-c. 24. Near Iver, 1952; *D.H.K.* The var. *CALCAREA* Pugsl. is recorded from v.-c. 17. Chalky field above Featherbed Lane, Farleigh, 1928, *J.E.L.*; E. of Buckland Hills, 1929, *E.C.W.*; *Hb.L.*, both teste *H.W.P.* Box Hill, 1952, *E.B.Ba.* & *A.M.*; *Hb.Mus.Brit.* det. *A.M.* The var. *TRANSIENS* Pugsl. is reported from v.-c. 17. Chalky lane near Fairchilde, 1941, *J.E.L.*; *Hb.L.* teste *H.W.P.* V.-c. 21. Chalkpit, Springwell, 1945, *D.H.K.*; *Hb.K.* det. *H.W.P.* The var. *COLLINA* Pugsl. is recorded from v.-c. 21. Chalkpit, Springwell, 1945, *D.H.K.*; *Hb.K.* det. *H.W.P.*

×*PSEUDOKERNERI*. V.-c. 17. South Hawke, 1929, *J.E.L.*; railway banks near Chipstead, 1930, *E.C.W.*; Featherbed Lane, Farleigh, 1932, *J.E.L.*; *Hb.L.*, all teste *H.W.P.*

[*E. CURTA* (Fries) Wettst. Erroneously recorded for v.-c. 17. Valley at back of Box Hill, off Headley Lane, 1929, by *R.W.R.* in *Botanical Records of the London Area* (1934). The species is not known to occur in the London Area.]

E. MICRANTHA Reichb., *E. GRACILIS* Drej. Native. Heaths and bogs. Very rare. V.-c. 17. Oxshott Heath, 1902, *C.E.B.*; *Hb.Kew*; Walton Heath, 1916, *C.E.S.*; *Hb.Mus.Brit.*, both teste *H.W.P.*

E. ANGLICA Pugsl., *E. ROSTKOVIANA* auct. angl. p.p., non Hayne. *Eyebright*. Grassy places on wet or heavy soils, and on heaths. Local. V.-c. 17. Bookham Common, 1927, *E.B.B.*; *Hb.B.* det. *D.H.K.*; 1950, *C.P.C.* & *D.H.K.*; *Hb.K.* Box Hill, 1928, *H.W.P.*; gravel pit, Tamworth, 1929; Ashtead, 1924; near Dowding Castle, Walton-on-the-Hill, 1941; Headley Heath, 1941; Headley Lane, 1943, *J.E.L.*; *Hb.L.*, all teste *H.W.P.* Pebblecombe Hill, 1952; *J.E.L.* V.-c. 18. Epping Forest,

C.S.N.; *Hb.L.N.H.S.* det. *D.H.K.* V.-c. 20. Wormley Wood, 1910, *P.H.C.*; *Hb.L.N.H.S.* det. *D.H.K.* Broxbourne, 1924, *E.B.B.*; *Hb.B.* det. *D.H.K.* V.-c. 21. Pinner, *C.B.G.*; *Hb.S.L.B.I.* det. *H.W.P.* Copse Wood, Ruislip, 1946, *B.W.*; *Hb.K.* det. *H.W.P.*; 1950-53; *D.H.K.*

E. PSEUDOKERNERI Pugsl., *E. KERNERI* auct. angl., non Wettst. *Eyebright.* Chalk downs. Local. V.-c. 16. Near Romney Street, Shoreham, 1929; *R.W.R.* V.-c. 17. Chipstead, 1923; *W.W.*; 1941, *J.E.L.*; *Hb.L.* teste *H.W.P.*; 1953; *J.E.L.* Banstead Downs, 1931, *E.C.W.*; Box Hill, 1925, *J.E.L.*; Buckland Hills, 1926, *E.C.W.*; Colley Hill, 1941; Epsom Downs, 1943, *J.E.L.*; *Hb.L.*, all teste *H.W.P.*

{**PARENTUCELLIA** Viv.

P. VIScosa (L.) Caruel, *BARTSIA VIScosa* L. *Yellow Bartsia.* Damp grassy places. Although not recorded from the Area by our members it was found near Westerham (v.-c. 16) just outside the radius by *L.M.P.S.* in 1952.]

ODONTITES Zinn

O. VERNA (Bellardi) Dum., *O. RUBRA* S. F. Gray, *BARTSIA ODONTITES* (L.) Huds. *Red Bartsia.* Cultivated and uncultivated fields, waste ground and waysides. Rather common. V.-c. 16. Near Chelsfield, 1913; near Eynsford, 1916; *E.B.B.* Near Knockholt, 1925; *L.J.T.* Brasted; Chevening, 1930; *P.H.C.* Force Green, 1932; *B.T.W.* Dartford; Stone, 1948-51; *H.M.P.* V.-c. 17. Near Oxted, frequent, 1917; above Limpsfield, frequent, 1921; Chipstead, 1929; *R.W.R.* Fetcham and Mickleham Downs, 1918; foot of Colley Hill, 1919; arable field N.W. of Betchworth railway station, 1923; *E.B.B.* Epsom Downs, 1930; Farthing Downs; Coulsdon, 1935; *P.H.C.* Bookham Common, 1948; *C.P.C.* & *E.B.Ba.*; 1952; *E.B.Ba.* V.-c. 18. Highams Park; *R.W.R.* Grays, 1909, *P.H.C.*; *Hb.L.N.H.S.* Chingford; *E.M.D.* Theydon Bois; *C.S.N.* Copt Hall Green, Epping; *C.N.* Chigwell; Shenfield; *P.H.C.* South Weald, 1922; *L.J.T.* V.-c. 20. Elstree; Totteridge; *C.S.N.* Essendon, 1920; *P.H.C.* Near Goff's Oak, 1926; *L.J.T.* London Colney, 1941; *J.B.* V.-c. 21. Harlington; *P.H.C.* Enfield Chase; Harefield; South Mimms; *C.S.N.*; 1929; *J.C.R.* Edgware, 1910; Stanwell Moor, 1913; *J.E.C.* V.-c. 24. Cornfields near Iver Heath; *C.S.N.* Plants with white flowers are recorded from v.-c. 21. Harefield, 1912; *J.E.C.* The segregate subspecies have been recorded as follows:—

Ssp. *VERNA*. V.-c. 17. Coulsdon, 1922, *J.E.L.*; *Hb.L.* Edge of wood by Banks Common, 1923; *E.B.B.* V.-c. 21. Bombed site, Ebury Street, S.W.1, 1946, *J.E.L.* & *D.McC.*; *Hb.L.*

Ssp. *SEROTINA* (Wettst.) E. F. Warb. V.-c. 16. Common in Swanscombe, Stone and Darenth parishes, 1952; *H.M.P.* V.-c. 17. Field near Kenley Aerodrome, 1925; Chessington, 1928; chalk down, Woodmanstone, 1941, *J.E.L.*; Epsom Common, 1930, *E.C.W.*; *Hb.L.* V.-c. 20. Broxbourne Wood, 1952; *R.M.P.* V.-c. 21. Harefield; Uxbridge; Yeadings; Harlington; Yeoveney; Haste Hill, Northwood, 1944-52; *D.H.K.*

PEDICULARIS L.

P. PALUSTRIS L. *Red Rattle*. Wet meadows. Very rare. V.-c. 21. Harefield, 1920; J.E.C.

P. SYLVATICA L. *Lousewort*. Wet heaths, bogs and marshes. Local. V.-c. 16. Chislehurst Common; W.W. Holwood Park, 1932; P.H.C. Hosey Common, frequent, 1913; E.B.B. Dartford Heath, 1947; J.B.M.; 1948-52; H.M.P. V.-c. 17. Arbrook Common, 1923; L.J.T. Walton, 1930; Epsom Common, 1935; P.H.C.; 1941; D.H.K. Ashtead, 1935; Bookham Common, 1930; P.H.C.; 1949-53; E.B.Ba. Limpsfield Chart, 1917; E.B.B. Reigate Heath, 1925, J.E.L.; Hb.L. Wimbledon Common, 1931; C.P.C.; 1937; C.A.; 1942; D.H.K. Ham Common, 1946; B.W. Limpsfield Common; R.W.R. V.-c. 18. Epping Forest, 1896, A.U.B.; Hb.L.N.H.S.; 1936; J.B.E. High Beach; E.M.D.; 1910, P.H.C.; 1938, W.E.G.; Hb.L.N.H.S. Lambourne; R.W.R. V.-c. 19. Epping Lower Forest, 1951; R.M.P. V.-c. 20. Near Wormley West End; C.S.N. Bricket Wood, 1909; P.H.C. Batchworth Heath; C.S.N. Broxbourne, 1910; Shenley, 1913, P.H.C.; Hb.L.N.H.S. Hertford Heath; S.C.M. V.-c. 21. Stanmore Common; C.S.N.; 1953; D.H.K. Ruislip Common; Northwood; C.S.N.; seen in both localities, 1944-53; Hadley Common, 1950; D.H.K. White-flowered plants are recorded from v.-c. 17. Limpsfield Chart, 1917; E.B.B.

RHINANTHUS L.

R. CRISTA-GALLI L., R. MINOR Ehrh., non L. *Yellow-rattle*. Pastures and railway banks, usually on dry basic soils. Rather common. V.-c. 16. Halstead, 1922; L.J.T. Above Otford, 1933; P.H.C. V.-c. 17. Bookham Common, 1925; E.B.B. Buckland Marsh, 1931, E.C.W.; Chertsey Mead, 1932; chalky slope, Chipstead Valley, 1941, J.E.L.; Hb.L. Nore Hill, Woldingham, 1936; P.H.C. Titsey Park, very local, 1922; Limpsfield, 1929; R.W.R. Meadow, Marden Park, 1937, E.B.Ba.; Hb.Mus.Brit. V.-c. 18. South Weald, 1913; P.H.C. Near Woodhatch, 1926; B.T.W. V.-c. 19. Cobbin's End, 1913; P.H.C. V.-c. 20. Totteridge; Elstree; Cheshunt; C.S.N. Aldenham; Bayford; Broxbourne; P.H.C. V.-c. 21. Mill Hill, 1898, E.M.D.; Hb.L.N.H.S.; 1945; D.H.K. Near Hampton Wick, 1928; Haste Hill, 1923; Eastcote; Ruislip, 1926; L.J.T.; seen in all three latter localities, 1945-50; D.H.K. Stanmore, 1908, C.S.N.; Hb.L.N.H.S. Harefield; P.H.C.; 1944; D.H.K. Southgate; L.B.H. Near Uxbridge Common; between Uxbridge and Denham; between Poyle and Yeoveney, 1944-53; D.H.K. V.-c. 24. Denham, 1930; P.H.C.; 1953; D.H.K. Iver Heath, 1940; D.H.K.

[R. STENOPHYLLUS (Schur) Druce. A plant with intercalary leaves well shown and resembling R. STENOPHYLLUS occurs in v.-c. 17. Near Warren Barn, Warlingham, 1943, J.E.L.; Hb.L. It may be only a variation of R. CRISTA-GALLI but deserves further study.]

MELAMPYRUM L.

M. ARVENSE L. *Field Cow-wheat*. Cornfields. Very rare, and probably extinct in the area. V.-c. 18. Monkham's Estate, Woodford, 1907; C.N.

M. PRATENSE L. *Common Cow-wheat*. Woods and heaths. Local. V.-c. 16. Hayes Common, 1899, L.B.H.; Hb.H. Keston, 1917; near Southfleet, 1919; P.H.C. Kingsdown, 1909; J.C.R. Near Shoreham, 1929; R.W.R. Near Brasted, 1935; M.M.W. Hosey Common, Westerham, 1936, P.H.C.; Hb.L.N.H.S. Dartford; Stone, 1948-52; H.M.P. V.-c. 17. Near Oxted, 1917; Limpsfield Chart, 1929; Limpsfield Common; R.W.R. V.-c. 18. Epping Forest, 1896, A.U.B.; High Beach, 1938, P.H.C.; Hb.L.N.H.S. Woodbury Hollow, Loughton, 1952; R.M.P. V.-c. 19. Epping Lower Forest, 1951; L.N.H.S. Excursion. V.-c. 20. Bricket Wood, 1910, P.H.C.; Hb.L.N.H.S. Broxbourne Wood, 1952; R.M.P. Near Northaw, 1920; Wormley West End, 1908; P.H.C. V.-c. 21. Harefield; C.S.N.; 1944; D.H.K. Coldfall Wood, Highgate; L.B.H. Highgate Woods; Winchmore Hill; Pinner Wood; Ruislip Woods, local, 1944-53; D.H.K. V.-c. 24. Fulmer; P.H.C. Black Park, 1950; D.H.K. The following varieties have been recorded:—Var. ERICETORUM D. Oliver. V.-c. 16. Keston Common; C.E.B. Var. COMMUTATUM (Tausch) Beck. V.-c. 17. Coulsdon, 1939, C.E.B.; Hb.L. Var. LANCEOLATUM Spen. V.-c. 17. Chelsham, 1934, C.E.B.; Hb.L. V.-c. 20. Near Broxbourne, 1930, C.E.B.; Hb.L.

OROBANCHACEAE

OROBANCHE L.

[O. RAPUM-GENISTAE Thuill. This rare species, which is parasitic chiefly on the roots of *Ulex* and *Sarothamnus*, has not been recorded for the area by our members. There are however old records from Surrey and West Kent, and it may reappear in these vice-counties.]

O. ELATIOR Sutton, O. MAJOR L. p.p. *Tall Broomrape*. Parasitic chiefly on *Centaurea Scabiosa* on dry calcareous soils. Rare. V.-c. 17. Roadside between Headley and Epsom Downs, 1926; enclosed chalk down, South Drive, Banstead, 1931, J.E.L.; Hb.L. Old chalkpit, Leatherhead, 1910; J.E.C. Parasitic on a self-sown seedling of *Cytisus albus* in a garden at Limpsfield, R.W.R.; Lond. Nat., 14, 75 (1935). Epsom College, 1930, I.B.B.; Tadworth, 1936, A.E.E.; Cuddington Golf-course, 1942, A.E.E.; Hb.E.C.M. Roadside, Ashtead, 1943, P.H.C.; Hb.L.N.H.S. V.-c. 21. Chalkpit, Harefield, 1902, C.B.G.; Hb.S.L.B.I.

O. HEDERAE Duby. *Ivy Broomrape*. Parasitic on *Hedera Helix*. Very rare. V.-c. 17. Kew Gardens, near the Natural Order beds, 1933-53; D.H.K. Thames towpath outside Kew Gardens, two plants—one on each side of the path—slightly different forms, 1948; W.H.S.

O. MINOR Sm., O. APICULATA Wallr. *Lesser Broomrape*. Parasitic chiefly on *Trifolium* species, but also on many other hosts. Common in

v.-c. 17, apparently local in the other v.-cc. V.-c. 16. Railway bank, Eynsford, *F.J.H.*; *Fl. Kent*, 267. Near Dartford, 1946; *J.E.L.*, *R.L.* & *D.H.K.* V.-c. 17. Rather common, especially on the chalk. V.-c. 18. Purfleet, 1910, *P.H.C.*; *Hb.L.N.H.S.* Stifford, 1913; *P.H.C.* Walthamstow Reservoir, 1951; *J.B.* V.-c. 20. London Colney, 1941; *J.B.* V.-c. 21. Between Shepperton and Sunbury, 1903, *C.B.G.*; *Hb.S.L.B.I.* Harmondsworth, 1906, *P.H.C.*; *Hb.L.N.H.S.* Harefield, 1908; *C.B.G.* Grounds of Ashford County Hospital; *J.K.H.* Canal bank between Hanwell and Southall, one plant, 1945; *D.K.*, *J.M.B.K.* & *D.H.K.* Springwell Chalkpit, 1945; *B.W.* Railway bank, Hampstead Heath railway station, 1949; *R.A.B.* Railway bank, Poyle, 1950; *D.H.K.* Abundant in a clover field at Stanwell Moor, 1951, *J.E.L.* & *D.H.K.*; *Hb.K.* & *Hb.L.* V.-c. 24. Denham; *C.S.N.*

LATHRAEA L.

L. SQUAMARIA L. *Toothwort.* Parasitic on roots of various woody plants, especially of *Corylus* and *Ulmus*, in woods and hedgerows, particularly on the chalk. Local. V.-c. 16. Elmstead; Bickley; Keston; *W.W.*; 1932, on *Ilex*, *Corylus*, *Ulmus* and *Syringa*; *P.H.C.* Downe; Pauls Cray; Farthing Street; near Kemsing; *W.W.* Magpie Bottom, N.E. of Oxtord, on *Ulmus*, 1922; *L.J.T.*; 1928; *R.W.R.*; on *Corylus*, 1932, *J.E.L.*; *Hb.L.* Westerham, on *Ligustrum*, 1936; Shoreham, 1932; *P.H.C.* Cudham, on *Ilex*, *Crataegus*, *Acer*, *Prunus avium* and *Ulmus*, 1937, *P.H.C.*; *Hb.L.N.H.S.* Near Holwood Farm, Farthing Street, 1947; *J.B.M.* Chevening Park, 1935; *H.M.P.* V.-c. 17. Kew Gardens; *P.H.C.* Near Box Hill, on *Ulmus*, 1904; *L.B.H.* Woods N.E. of Titsey Church, 1917; Hall Shaw Copse on Titsey-Woldingham Road, 1927; Barrow Green Woods, Oxted, 1928; wood below Nore Hill, Chelsham, 1939, plentiful on *Acer*; *R.W.R.* Between Tadworth and Headley, on *Corylus*, 1922; *L.J.T.* Copse between Walton Downs and Walton-on-the-Hill; *A.E.E.* Chipstead Valley, 1927, *E.C.W.*; Marden Park, 1924, *J.E.L.*; *Hb.L.*; 1949; Warlingham, 1950; *R.M.P.* Mugswell, 1945, *C.I.P.*; *Hb.L.N.H.S.* Colley Hill, 1932, *J.E.L.*; *Hb.L.* Tandridge; Ashtead, 1948; *J.B.E.* V.-c. 21. Springwell Lane, near Harefield, 1928; *L.N.H.S. Excursion*; frequent on *Ulmus*, 1939-53; copse near Jack's Lock, Harefield, on *Ulmus* and *Corylus*, 1939-53, *D.H.K.*; *Hb.K.* A cream-coloured form occurred in v.-c. 17. Farleigh; *W.W.* A straw-coloured form occurs in v.-c. 21. Springwell Lane, near Harefield, 1939-53; *D.H.K.* Some of the alleged host plants require confirmation.

LENTIBULARIACEAE

UTRICULARIA L.

U. VULGARIS L. *Common Bladderwort.* Lakes, ponds and ditches. Very local. V.-c. 18. Pools near Whipps Cross, 1909, *T.W.* teste J.O.B.*; 1923, *R.W.R.* Near George Lane, Woodford, 1909, *J.O.B.*; *Hb.L.N.H.S.*; 1944, *J.R.* V.-c. 21. Pond at Hampton Court,

1936; *A.B.*; Long Water, abundant, but rarely flowering, 1950-53; *D.H.K.* Gravel pits, Bedfont, 1946; Shortwood Common; Yeoveney; *A.W.W.* Hounslow Heath, in two places, abundant, 1947, *L.G.P.* & *D.H.K.*; *Hb.K.* & *Hb.L.*; still plentiful, but only two plants in flower, 1951; *D.H.K.*

U. NEGLECTA Lehm., *U. MAJOR* auct. *Greater Bladderwort*. In similar situations to the preceding species. Very rare. V.-c. 18. Epping Forest, near Epping, *R.W.R.*; *L.N.H.S.* 1915 Trans., 45 (1916). There are many old records from the Staines-Wraysbury area on the borders of v.-cc. 21 and 24, and ponds in that area should be searched.

[*PINGUICULA* L.]

P. VULGARIS L. *Common Butterwort*. Alien. Europe, including many parts of Britain. V.-c. 17. Reigate Heath, two little plants looking rather sick, but flowering—recently planted, 1950; *B.M.C.M.*]

ACANTHACEAE

ACANTHUS L.

A. SPINOSUS L. Alien. S. Europe. Garden escape. V.-c. 21. Waste ground, Chiswick, two plants, 1946, *D.H.K.*; *Hb.K.*

VERBENACEAE

VERBENA L.

V. OFFICINALIS L. *Vervain*. Waysides, downs, field borders and waste places. Common in v.-cc. 16 and 17, rather local in the other v.-cc. V.-cc. 16 and 17. Frequent, especially on the chalk. V.-c. 18. Stapleford Tawney; *C.S.N.* V.-c. 20. Chandlers Cross; *C.S.N.* Rye House, 1909, *P.H.C.*; *Hb.L.N.H.S.* Amwellbury; *P.H.C.* Great Amwell; *S.C.M.* V.-c. 21. East Bedfont; *P.H.C.* Near Uxbridge; Staines; Hampton; *C.S.N.*; seen in all three places, 1944-53; Harefield; between Yiewsley and Iver; Cowley; Uxbridge Moor; Eastcote; Denham; Staines and Stanwell Moors; Shortwood Common; Bedfont; Laleham; Charlton; Shepperton, 1944-53; *D.H.K.* Chiswick, 1942; *B.W.* Bombed site, Wood Green, 1946; *M.A.R.S.S.* Bombed site, Earls Court, 1952; *H.T.C.* V.-c. 24. Iver; *C.S.N.*; 1953; Denham, 1944-53; *D.H.K.*

LABIATAE

MENTHA L.

We are greatly indebted to Mr. R. A. Graham for naming many specimens in this critical genus (these records are followed by his initials), for supplying many records from his herbarium (indicated in this account as *Hb.G.*), and for reading through the typescript and making many valuable suggestions. Many specimens in *Hb.L.* have

*Wilson, T.

been determined by those well known *Mentha* specialists the late A. L. Still and the late J. Fraser; Mr. Graham points out however that in the light of modern knowledge many of the "varieties" of *M. aquatica*, *M. arvensis* and *M. × verticillata* are probably of little worth taxonomically. As, however, many of these "varieties" have been cited in recent Floras and other botanical literature we have included them here with supplementary comments by Mr. Graham.

M. ROTUNDIFOLIA (L.) Huds. *Apple-scented Mint*. Garden outcast. Established by roadsides. Very rare. V.-c. 20. Opposite Water Hall Farm, near Hertford, 1933, *J.E.L.*; *Hb.L.* teste *J.Fr.*

M. × CORDIFOLIA Opiz, **M. ROTUNDIFOLIA × SPICATA**. Garden outcast. Naturalised in grassy places. Very rare. V.-c. 17. Arbrook Common, 1934, *J.Fr.*; *Hb.L.*, as var. *BREVIFOlia* Fraser.

M. ALOPECUROIDES Hull, ? **M. LONGIFOLIA × ROTUNDIFOLIA**. Garden outcast. Naturalised on banks, commons and grassy places, and established on waste ground and by roadsides. Not common. V.-c. 17. Railway bank, Morden, 1929, *E.C.W.*; lane by Flanchford Mill, near Reigate, abundant, and over 6' high, 1932, *J.E.L.*; *Hb.L.*, both teste *J.Fr.*; 1952; *J.E.L.* Bookham Common, 1953; *E.B.Ba.* Ashtead, 1942, *P.H.C.*; *Hb.L.N.H.S.* Near Burford Bridge, 1953; *R.A.B.* V.-c. 21. West Heath, Hampstead, a large patch, 1949; *E.C.W.*, *F.R.*, *R.A.B.* & *D.H.K.* Rubbish-tip, Hounslow Heath, 1948; *B.W.* det. *R.A.G.* Ken Wood, 1949; *H.C.H.* & *D.H.K.* Park Avenue, Ruislip, 1950; *D.P.Y.*

M. LONGIFOLIA (L.) Huds., **M. SYLVESTRIS** L. *Horse-mint*. Garden outcast. Naturalised in grassy places, and established on waste ground, rubbish-tips, and by roadsides. Rather common. V.-c. 17. Woodcote Park, 1929; Reigate Heath, 1936, *E.C.W.*; sandpit near Tilburstow Hill, 1949, *J.E.L.*; *Hb.L.* Morden, 1948, *R.A.G.*; *Hb.G.* Near Ham gravel pits, 1953; *R.A.B.* V.-c. 19. Epping Lower Forest, 1952; *R.M.P.* V.-c. 20. Great Amwell, 1910, *P.H.C.*; *Hb.L.N.H.S.* Rubbish-tip, Caledonian School, Bushey, 1950, *R.A.G.*; *Hb.G.* V.-c. 21. Yiewsley, 1924; *J.E.C.* Roadside N. of Cockfosters, 1945; *B.W.* Rubbish-tip, Hanwell, 1946; Kenton, 1950; *D.H.K.* Brent Reservoir, two patches, 1949, *R.A.G.*; *Hb.G.*; 1952; *L.N.H.S.* *Excursion*. Rubbish-tip, Harefield, 1951, *R.A.G.*; *Hb.G.*

Var. **NEMOROSA** (Willd.) Druce. V.-c. 17. Nutfield Marsh, 1932, *J.E.L.*; *Hb.L.* teste *J.Fr.*

Var. **PULVERULENTA** (Strail) Briq. V.-c. 16. Eynsford; *R.A.G.* By river Darent, near Farningham, 1934, *J.E.L.*; *Hb.L.* V.-c. 17. Heathland near Tadworth Village, 1928, *J.E.L.*; *Hb.L.* teste *J.Fr.* "A worthless variety"—*R.A.G.*

Var. **HORRIDULA** Briq. V.-c. 17. Nutfield Marsh, 1932, *J.E.L.*; *Hb.L.* det. *J.Fr.* as *M. × NOULETIANA* Timb.-Lagr.; 1937, *R.A.G.*; *Hb.G.* V.c.

20. By the railway, Rickmansworth, 1950, *R.A.G.*; *Hb.G.* V.-c. 21. Northwood, 1949, *R.A.G.*; *Hb.G.*

M. × VILLOSINERVATA Opiz, *M. LONGIFOLIA × SPICATA*. Garden outcast. Naturalised in grassy places. Very rare. V.-c. 17. Reigate Heath, 1934, *A.L.S.*; *Hb.L.*

M. SPICATA L. em. Huds. *Spear-mint*. Garden outcast. Naturalised in grassy places, and established by roadsides and on waste ground. Not common. V.-c. 17. Roadside, Little Heath, near Oxshott, 1915; *E.B.B.* Rubbish-tip, Broadham Green, Oxted, 1921; *R.W.R.* St. George's Hill, Weybridge, 1928; by Paper Mills, Esher, 1929, *J.E.L.*; *Hb.L.*, both teste *J.Fr.* Wimbledon Common, 1926; *C.A.* Godstone, 1937, *D.B.F.**; Ashtead, 1948, *R.A.G.*; *Hb.G.* V.-c. 21. Stanwell Moor, 1904, *C.B.G.*; *Hb.S.L.B.I.* Waste ground, Kenton, 1944; Hanger Hill, Ealing, 1946; *D.H.K.* Bombed site, Ebury Street, S.W.1; *D.McC.* Rubbish-tip, Hounslow Heath; *A.W.W.* Brent Reservoir, 1952, *R.A.G.*; *Hb.G.*; 1953; *L.N.H.S. Excursion*.

M. × PIPERITA L. var. *PIPERITA*, *M. AQUATICA × SPICATA*. *Peppermint*. Garden outcast. Naturalised in grassy places. Rare. V.-c. 17. Broadham Green, Oxted, 1921, *R.W.R.*; *Hb.B.* Oxted, 1933, *R.A.G.*; *Hb.G.* V.-c. 21, Harefield, 1928; *J.E.C.* V.-c. 24. Iver Heath, 1912, *P.H.C.*; *Hb.L.N.H.S.*; 1935, *A.L.S.*; *Hb.L.* det. *R.A.G.*

Var. *SUBCORDATA* J. Fraser. V.-c. 17. Field, Little Briton Hill, Sandinstead, 1927, *J.E.L.*; *Hb.L.*

M. AQUATICA L. *Water Mint*. Marshes, stream-, river-, and pond-sides, and wet woods. Common throughout the Area. The following "varieties" are probably of little worth, but merely serve to indicate the range of variation in this polymorphous species.

Var. *HIRSUTA* (Huds.) Huds. V.-c. 17. Oxted Mill, 1937, *D.B.F.*; Ashtead Village pond, 1948, *R.A.G.*; *Hb.G.* V.-c. 20. Rickmansworth, 1945 and 1950, *R.A.G.*; *Hb.G.* V.-c. 21. Ruislip Reservoir, 1949; Stanmore Common, 1950, *R.A.G.*; *Hb.G.*

Var. *SUBGLABRA* Baker. V.-c. 21. Thames bank opposite Long Ditton, 1919, *J.Fr.*; *Hb.Kew.*

Var. *LOBELIANA* Beck. V.-c. 17. Thames towing-path, Mortlake, 1929, *J.E.L.*; *Hb.L.* teste *J.Fr.* V.-c. 21. Osterley Park, 1948; *B.W.* teste *R.A.G.*

Var. *MINOR* Sole. V.-c. 21. Thames bank below Staines, 1885, *J.Fr.*; *B.E.C. 1934 Rep.*, 614 (1935).

*Fanshawe, D. B.

Var. MAJOR Sole. V.-c. 17. Reigate Heath, 1929, *J.E.L.*; *Hb.L.* teste *J.Fr.* V.-c. 21. Stanmore Common, 1928, *J.E.L.*; *Hb.L.* teste *J.Fr.* "Not an adequately detectable 'variety'."—*R.A.G.*

Var. PEDUNCULATA Perard. V.-c. 16. Near Westerham, 1937, *D.B.F.*; *Hb.G.*

Var. WEIHEANA (Opiz) H. Braun. V.-c. 17. Thames side, Molesey Hurst, 1929, *J.E.L.*; *Hb.L.* teste *J.Fr.*

Var. DENTICULATA (Strail) H. Braun. V.-c. 17. Godstone, 1937; *D.B.F.*; Ashtead Village pond, 1948, *R.A.G.*; *Hb.G.* V.-c. 20. Canal side, Rickmansworth, 1950, *R.A.G.*; *Hb.G.* V.-c. 21. Stanmore Common, 1950, *R.A.G.*; *Hb.G.*

Var. ORTMANNIANA (Opiz) H. Braun. V.-c. 17. Godstone, 1934; Oxted, 1937, *D.B.F.*; *Hb.G.*

Var. ELONGATA Perard. V.-c. 17. Oxted; Broadham Green, 1937, *D.B.F.*; *Hb.G.*

[\times SMITHIANA. V.-c. 19. Near Roydon Mill railway station, 1935, *A.L.S.*; *Hb.L.* Perhaps in v.-c. 20. "This is probably wrongly named. The plant concerned is probably a form of *M. \times citrata*."—*R.A.G.*.]

M. \times CITRATA Ehrh., *M. AQUATICA* \times *SPICATA*. Garden outcast. Naturalised in grassy places. Rare. V.-c. 20. Northaw, *L.B.H.*; *Trans. L.N.H.S.* 1914, 17 (1915); 1933, *J.E.L.*; 1934, *A.L.S.*; *Hb.L.*

M. \times VERTICILLATA L., *M. \times SATIVA* L., *M. AQUATICA* \times *ARVENSIS*. Arable fields, pond-sides, ditches, etc. Rather common, and often occurring where only one parent is present. V.-c. 17. Oxted, 1923; *R.W.R.*; 1937, *D.B.F.*; *Hb.G.* Mitcham Common, 1937; *J.B.E.* Chertsey, 1945, *J.E.L.*; *Hb.L.* teste *R.A.G.* Bookham Common, 1953; *E.B.Ba.* V.-c. 18. Hainault Forest, 1908, *A.B.H.*; *Hb.L.N.H.S.* V.-c. 20. Redwell Wood, 1905; *C.S.N.*; Totteridge, 1912, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 21. Harefield, 1900, *C.S.N.*; *Hb.L.N.H.S.* Northwood, 1919; North Finchley, 1920; *J.E.C.* Ruislip Reservoir, 1949, *R.A.G.*; Teddington, 1950, *B.W.*; *Hb.G.*

Var. PALUDOSA (Sole) Druce. V.-c. 17. Barron's Pond, Epsom, 1929; ditch near Betchworth, 1927, *E.C.W.*; Great Bookham Common, 1929, *J.E.L.*; 1934, *A.L.S.*; *Hb.L.* Farm Bog, Wimbledon Common, 1937; *C.A.* Oxted, 1937, *D.B.F.*; *Hb.G.* V.-c. 21. Ruislip Reservoir, 1949, *R.A.G.*; Teddington, 1950, *B.W.*; *Hb.G.*

Var. OVALIFOLIA (Opiz) Briq. V.-c. 17. Hare Green Lane, Claygate, 1929, *J.E.L.*; *Hb.L.* teste *J.Fr.*

Var. SUBSPICATA (Weihe) Druce. V.-c. 21. Laleham, 1885, *J.Fr.*; *B.E.C.* 1924 *Rep.*, 621 (1925). "A worthless variety"—*R.A.G.*

Var. *RIVALIS* (Sole) Briq. V.-c. 17. Barron's Pond, Epsom, 1925, *J.E.L.*; *Hb.L.* teste *J.Fr.*

Forma *CALVA* Still. V.-c. 21. Stanmore Common, 1928, *J.E.L.*; *Hb.L.*—see *J. Bot.*, 74, 202-3 (1936) and *B.E.C. 1936 Rep.*, 227 (1937).

M. × GENTILIS L., *M. ARVENSIS* × *SPICATA*. Garden outcast. Naturalised by ditch sides, and in grassy places, and established on waste land. Not common. V.-c. 17. Ditch, Broadham Green, Oxted, 1921; *E.L.R.*; 1932. *E.C.W.*; 1933, *J.E.L.*; *Hb.L.* teste *J.Fr.* West End Common, Esher, 1934, *J.E.L.*; *Hb.L.* Morden, 1948, *R.A.G.*; *Hb.G.*; since destroyed; *R.A.G.* Near Ham gravel pits, 1953; *R.A.B.* Vacant building site, Sanderstead, 1951, *D.P.Y.* teste *R.A.G.*; *B.S.B.I. 1952 Year Book*, 108. V.-c. 21. Eccleston Square, S.W.1, 1953, *D.McC.*; *Hb.G.*

Var. *GRATA* Briq. V.-c. 17. Oxted, 1937, *D.B.F.*; *Hb.G.*

M. × GRACILIS Sole, *M. ARVENSIS* × *SPICATA*. Garden outcast. In similar situations to the preceding species. Rare. V.-c. 21. Rubbish-tip, Harefield, 1953, *F.M.D.**; *Hb.G.*

Var. *CARDIACA* (Baker) Briq. V.-c. 16. Dartford Heath, two plants, 1947, *H.M.P.*; *Hb.L.*; one plant, 1948; *H.M.P.* V.-c. 21. Waste ground, Turnham Green, 1949, *R.A.B.*; *Hb.K.* Brent Reservoir; *R.A.G.*; 1953; *L.N.H.S. Excursion*. Burton Court, Chelsea, 1947, *R.A.G.*; *Hb.G.*; since destroyed; *R.A.G.*

M. × SMITHIANA R. A. Graham, *M. AQUATICA* × *ARVENSIS* × *SPICATA*. Sides of ditches, damp hedgebanks, etc. Local. V.-c. 17. Nutfield Marsh, 1932, *J.E.L.*; *Hb.L.*; 1934, *A.L.S.*; *Hb.G.* West End Common, Esher, 1951; *R.A.B.* Oxted, 1936, *D.B.F.*; *Hb.G.* V.-c. 21. Enfield Chase, 1899, *C.S.N.*; *Hb.L.N.H.S.* Ditch near Harefield; *B.W.* det. *R.A.G.*; 1951; Brent Reservoir, 1946, now apparently gone; Northwick Park Golf Course, 1947, *R.A.G.*; *Hb.G.*

M. ARVENSIS L. *Corn Mint*. Arable fields, waste ground, grassy places, streamsides, pond verges and woods. Common in all the v.-cc.

Var. *OBTUSIFOLIA* Lej. & Court. V.-c. 17. By river Mole, Leatherhead, 1935, *A.L.S.*; *Hb.L.* V.-c. 21. Thames bank, Kingston Bridge, 1920, *J.Fr.*; *Hb.Kew.*

Var. *NUMMULARIA* Schreb. V.-c. 21. Thames bank opposite Surbiton, 1914; Thames bank opposite Kingston, 1917, *J.Fr.*; *Hb.Kew.*

Var. *AGRESTIS* (Sole) Sm. V.-c. 17. Cheverell's Farm, Botley Hill, 1928, *J.Fr.*; *Hb.L.*

*Day, F. M.

Forma ANGUSTIFOLIA J. Fraser, ? var. AUSTRIACA (Jacq.) Briq. V.-c.
21. Harefield; Pinner Hill, 1946, D.H.K.; Hb.K. det. R.A.G. Brent Reservoir; R.A.G.

Var. DENSIFOLIATA Briq. V.-c. 17. By Barron's Pond, Epsom, 1928; woods by South Hawke, 1929, J.E.L.; Hb.L. both teste J.Fr.

Var. CUNEIFOLIA Lej. & Court. V.-c. 17. By river Mole, Leatherhead, 1935, A.L.S.; Hb.L. V.-c. 21. Thames bank near Hampton Court, 1930, J.Fr.; Hb.Kew; 1931, J.Fr.; Hb.L.

Forma HIRTIPEST J. Fraser. V.-c. 20. Aldenham Reservoir, 1929, J.E.L.; Hb.L. V.-c. 21. Cornfield, Upper Halliford, 1928, J.E.L.; Hb.L. both det. J.Fr.

M. PULEGIUM L. *Penny-royal.* Damp heathy places. Very rare. V.-c. 16. Damp hollow, Chislehurst Common, 1885, F.J.H.; Hb.Mus.Brit. V.-c. 17. Limpsfield Common, 1917; pond at Chelsham, 1921; R.W.R.; 1923, J.E.L.; Hb.L. Burgh Heath, 1923; W.W.; 1928, E.C.W.; Hb.L. Mitcham Common, 1929; A.L.S.

LYCOPUS L.

L. EUROPAEUS L. *Gipsy-wort.* Banks of rivers, streams and ditches, and in marshes. Common in all the v.-cc.

ORIGANUM L.

O. VULGARE L. *Marjoram.* Dry pastures, banks and downs on dry, usually calcareous soils. Locally common. V.-c. 16. Common on the chalk. V.-c. 17. Frequent on the chalk. V.-c. 18. Thurrocks, 1909, P.H.C.; Hb.L.N.H.S. Old chalkpit, Grays, 1952; B.T.W. V.-c. 20. Broxbourne, local; C.N. Newgate Street, near Northaw, 1920; P.H.C. V.-c. 21. Harefield; C.N.; very local, 1944-53; D.H.K. Railway bank near Mill Hill, 1920; J.E.C. Uxbridge, 1905, C.B.G.; Hb.S.L.B.I. Dukes Meadows, Chiswick, 1937, E.B.Ba.; Hb.S.L.B.I. Scratch Wood, 1943; R.S.R.F. Baber Bridge, Hounslow Heath, 1948; A.W.W. White-flowered plants are recorded from v.-c. 16. Chalkpit, Swanscombe, 1952; H.M.P. V.-c. 17. Fetcham Downs, 1918; E.B.B.

THYMUS L.

The British species of THYMUS have recently been revised by C. D. Pigott (*B.S.B.I. 1950 Conf. Rep.*, 91-95), and in following his arrangement it has been necessary to exclude many old records which are not backed by specimens. We are indebted to Mr. Pigott for naming a number of gatherings in Hb.K. & Hb.L.

T. PULEGIOIDES L., T. CHAMAEDRYS Fries, T. OVATUS Mill., T. GLABER Mill. *Larger Wild Thyme.* Heaths, dry grassy places and banks. Locally plentiful, especially on the chalk. V.-c. 16. Chislehurst Common, 1885, F.J.H.: Hb.Mus.Brit. det. D.H.K. Chalky slope near Brasted, 1927,

J.E.L.; *Hb.L.* Hosey Common, 1942, *P.H.C.*; *Hb.L.N.H.S.* det. *D.H.K.* Dartford Heath, 1948; *H.M.P.* Hayes and Keston Commons, 1953; *D.H.K.* V.-c. 17. Common on the chalk, on other soils:—Wimbledon Common, 1923; Littleworth Common, 1929; Mitcham Common, 1927; Worm's Heath, 1926, *J.E.L.*; *Hb.L.* det. *C.D.P.* Bookham Common, 1950; *D.H.K.* V.-c. 19. Nazeing, 1949; *D.H.K.* V.-c. 20. Watford; Cassiobury Park, 1903; *C.S.N.*; Bricket Wood, 1910, *P.H.C.*; *Hb.L.N.H.S.*, all det. *D.H.K.* Springwell, 1950, *D.H.K.*; *Hb.K.* det. *C.D.P.* Rickmansworth, 1953; *D.H.K.* V.-c. 21. Ruislip Common, abundant; Harefield; Springwell; Bushy Park; Syon Park; Bedfont churchyard, 1944-52, *D.H.K.*; *Hb.K.*, all det. *C.D.P.* Knowle Green, 1948; *D.H.K.*

T. DRUCEI Ronn. em. Jalas. *Wild Thyme*. Dry grassy places on the chalk. Locally abundant in v.-c. 17, but so far unrecorded from the portions of the other v.-cc. which fall within the Area. V.-c. 17. Park Downs, Banstead, 1927, *E.C.W.*; Sutton-by-pass, 1927, *J.E.L.*; *Hb.L.*, both det. *C.D.P.* Colley Hill, 1941, *J.E.L.*; *Hb.L.*

CLINOPODIUM L.

C. VULGARE L., *CALAMINTHA VULGARIS* (L.) Druce, *C. CLINOPODIUM* Benth. *Wild Basil*. Hedges, wood borders and scrub on dry, particularly calcareous, soils. Common in v.-cc. 16 and 17, rather local elsewhere. V.-cc. 16 and 17. Frequent on the chalk. V.-c. 18. Warley; Purfleet, 1913; *P.H.C.* Grays, 1913; *C.S.N.* Stanford Rivers, 1951; *R.M.P.* V.-c. 19. Near Roydon, 1902; *C.S.N.* Nazeing, 1913, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 20. Chandlers Cross, 1903; Broxbourne, 1909, *P.H.C.*; *Hb.L.N.H.S.* Colney Heath; Oxhey Woods; *C.S.N.* Cole Green; *S.C.M.* V.-c. 21. Stanwell; South Mimms; *P.H.C.*; 1946; *D.H.K.* Harefield; *C.S.N.*; 1919; *J.E.C.*; 1939-53; *D.H.K.* N. of Ruislip Reservoir, 1921; *L.J.T.* Northwood, 1915; *J.E.C.* Gravel pit W. of Hounslow Heath, 1947; *H.B.* & *D.H.K.* Warren Gate, 1950; *D.H.K.* V.-c. 24. Denham; *P.H.C.*; 1953; *D.H.K.* White-flowered plants are recorded from v.-c. 17. Caterham, 1912; *J.E.C.*

ACINOS Mill.

A. ARVENSIS (Lam.) Dandy, *CALAMINTHA ACINOS* (L.) Clairv., *SATUREJA ACINOS* (L.) Scheele. *Basil-thyme*. Arable fields, banks and grassy places on dry, usually calcareous, soils. Frequent in v.-c. 17, local elsewhere. V.-c. 16. Between Leaves Green and Layham's Farm, 1917; Dartford, 1938, *P.H.C.*; *Hb.L.N.H.S.*; 1951; *H.M.P.* Near Chelsfield railway station, 1930, *J.E.L.*; *Hb.L.* V.-c. 17. Common on the chalk. V.-c. 18. Purfleet, 1910, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 21. Harefield; *L.B.H.*; 1907-19; *J.E.C.*; 1945; *D.H.K.* Railway bank between Denham and Uxbridge, in small quantity, 1953, *T.G.C.*, *M.C.* & *D.H.K.*; *Hb.K.*

CALAMINTHA Mill.

C. NEPETA (L.) Savi, *SATUREJA NEPETA* (L.) Scheele. *Lesser Calamint*. Dry banks and roadsides on chalky or gravelly soils. Very local. V.-c.

16. Abbey Wood; *W.W.*; 1948; *R.A.B.* Near Greenhithe; Stone; Green Street Green, near Darenth, 1946; *F.R.* Old pit near Lessness Abbey, in great quantity, 1951; *J.E.L.*, *B.W.* & *J.C.C.* Mount's Wood, Swanscombe, 1948-51; *H.M.P.* V.-c. 18. Grays, 1925; *J.E.C.* Riverside W. of Grays, 1949, *B.W.* & *J.E.L.*; *Hb.L.* V.c. 20. Baldwin's Lane, near Croxley Green, 1903, *C.S.N.*; *Hb.L.N.H.S.*

C. ASCENDENS Jord., *C. OFFICINALIS* auct. angl. *Common Calamint.* Dry calcareous banks, downs and wood borders. Local. V.-c. 16. Mount's Wood; Darenth, 1948-51; *H.M.P.* V.-c. 17. Box Hill; above Oxted, 1917; *R.W.R.* Railway bank, Sutton, 1926; Chapel Wood, near Box Hill, 1929, *E.C.W.*; *Hb.L.* V.-c. 18. Chadwell, 1913, *P.H.C.*; *Hb.L.N.H.S.* Hangman's Wood, Grays, 1913; *C.S.N.* V.-c. 21. Old chalkpit, Harefield, only known Middlesex station, 1939-53, *D.H.K.*; *Hb.K.* V.-c. 24. Denham, 1906; *P.H.C.*

MELISSA L.

M. OFFICINALIS L. *Balm.* Alien. Europe, W. Asia, and N. Africa Garden escape. Naturalised on banks, and in grassy places, and established by waysides and on waste ground. Not common. V.-c. 16. Darenth Lane, Darenth, 1948-51; *H.M.P.* V.-c. 17. Box Hill, 1900, *C.S.N.*; Addington, 1902, *C.S.N.*; Belmont, Sutton, 1940, *P.H.C.*; *Hb.L.N.H.S.* Limpsfield Common; *R.W.R.* Roadside, Church Cobham, 1950; grassy bank, Petersham, near Richmond, 1945; *B.W.*; 1949; *R.A.B.* Barnes Common, 1952; *M.M.* Banstead, 1940-43; *P.H.C.* Wimbledon Common, a small patch, 1951; *R.A.B.* Chipstead; foot of Betchworth chalkpits, 1951; *J.D.L.* Bookham Common, 1953; *E.B.Ba.* V.-c. 21. Whetstone, 1906; Harefield, 1913, *J.E.C.*; *Hb.Mus.Brit* Waste ground, Hanwell, c. 1932; *D.H.K.* Laleham Park; *A.W.W.* Railway banks near Hounslow East station, abundant, 1946-53; *D.H.K.*

SALVIA L.

S. PRATENSIS L. *Meadow Clary.* Grassy places on the chalk, also as a casual on waste ground, and by roadsides. Rare. V.-c. 16. Field behind Farnborough Church, 1936, *H.W.M.*; rough field, Green Street Green, near Farnborough, 1937, *J.E.L.*; *Hb.L.* Farnborough, 1943; *H.N.* V.-c. 17. Between Oxshott and Cobham, several plants in the turf by a new road, 1925; *L.G.P.* Between Limpsfield and Westerham, five plants, 1930, *R.W.R.*; *Hb.R.* Meadow, Headley, 1941, *J.C.G.*†; *Hb.E.C.M.* Headley Park, many plants, 1943; *J.E.L.* Colley Hill, 1951; *L.N.H.S.* *Excursion.*

S. HORMINOIDES Pourr., *S. VERBENACA* auct. brit. p. max. p. *Wild Clary.* Dry pastures and waysides. Locally abundant on the chalk, and in the vicinity of the upper Thames. V.-c. 16. Above Charlton chalk-pits, 1918; *E.B.B.* Near Northfleet, 1919; Crayford; Stone churchyard, 1938; borders of Hayes Common; *P.H.C.* Darenth churchyard;

†Gaman, J. C.

Knockholt railway station; W.W. Shoreham churchyard, 1922; *L.J.T.* Common on the chalk from Northfleet to Horn's Cross, 1952; *H.M.P.* V.-c. 17. Thames side, Ham, 1871, *F.J.H.*; *Hb.Mus.Brit.* 1944; B.W. Reigate, 1919; by river Thames between Kew and Richmond, 1920; *L.J.T.*; 1925, *J.E.L.*; *Hb.L.* Near Worm's Heath, 1921; *R.W.R.* Wimbledon Common, 1934; *C.A.*; 1935; *C.P.C.* Roadside near Ewell East railway station, 1934-39; *R.S.R.F.* By Bookham railway station, 1952; *A.W.J.* V.-c. 18. Purfleet, 1910; Chadwell, 1913; between Upminster and Stifford; *P.H.C.* Dagenham Dock, 1927; *J.E.C.* Old chalkpit, Grays, 1952; *B.T.W.* V.-c. 19. Great Parndon churchyard, 1913, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 21. Towing path, Hampton Court; *C.S.N.*; abundant, 1928; *L.J.T.*; still abundant, 1938-53; *D.H.K.* Railway bank. Staines Moor; *W.F.* Ballast pit, Shepperton, in considerable quantity, 1947; *C.L.C.* S. *VERBENACA* var. *RUBELLA* Jord. & Fourr. is reported from v.-c. 16. Railway bank, Bickley; *F.R.B.*

S. OFFICINALIS L. *Sage*. Alien. S. Europe. Garden escape. V.-c. 21. Waste ground, Edgware, 1950, *D.H.K.*; *Hb.K.*

S. SCLAREA L. Alien. Mediterranean region. Garden escape. V.-c. 21. Finsbury Park, 1952; *J.B.* det. *A.M.* & *D.H.K.* Rubbish-tip, Hanwell, 1953, one huge plant; *D.H.K.*

S. SYLVESTRIS L. Alien. S. Europe and W. Asia. V.-c. 20. Great Amwell, 1908, *P.H.C.*; *Hb.L.N.H.S.* det. at Kew.

S. NEMOROSA L. Alien. Europe. V.-c. 24. Near Iver, 1911; *J.E.C.*

S. VERTICILLATA L. Alien. S. Europe, Asia Minor, etc. Naturalised in grassy places. Not common. V.-c. 16. Greenhithe, 1939, *P.H.C.*; *Hb.L.N.H.S.* Darent Creek, Dartford, 1948; *H.M.P.* V.-c. 17. Old chalkpit, Nore Hill, 1921 and 1937, *J.E.L.*; *Hb.L.* Banstead Heath, 1925; *C.E.B.* Selsdon Road, Croydon, *D.P.Y.*; *Watsonia*, 1, 256 (1951). V.-c. 18. Walthamstow Reservoirs. 1952; *J.B.* det. *D.H.K.* V.-c. 20. Disused quarry, Great Amwell, 1938, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 21. Muswell Hill, 1905; Finchley, 1907-8; Yiewsley, 1909; *J.E.C.* Uxbridge, 1908, *C.B.G.*; *Hb.S.L.B.I.* Railway banks near South Greenford, 1951, *D.H.K.*; *Hb.K.* V.-c. 24. Near Iver, 1910; near Uxbridge, 1912; *J.E.C.*

S. REFLEXA Hornem. Alien. N. America. V.-c. 18. Dagenham, 1949, *N.Y.S.*; *Watsonia*, 1, 317 (1950). V.-c. 21. Rubbish-tip, Hanwell, one plant, 1951, *J.E.L.*, *D.McC.* & *D.H.K.*; *Hb.K.* det. *N.Y.S.*

S. AMPLEXICAULIS Lam. Alien. S. Europe. Established on grassy waste land. Rare. V.-c. 16. Belvedere Marshes, 1951-52, *G.A.M.*; *Hb.Mus.Brit.* det. *A.M.*

NEPETA L.

N. CATARIA L. *Cat-mint*. Hedgebanks, roadsides and grassy places, mainly on the chalk. Local. V.-c. 16. Green Street Green, near Farnborough, 1865, *F.J.H.*; *Hb.Mus.Brit.* S. of Farnborough; E. of

Shoreham; W.W. Footpath between Romney Street and Shoreham, 1937; R.W.R. Eynsford, 1917, J.E.W.; Hb.L. Swanscombe Marshes; Mount's Wood, 1948-50; Lullingstone Park, 1953; H.M.P. Near Farningham Road railway station, 1950; R.A.B. V.-c. 17. Weybridge Heath, 1917, E.B.B.; Hb.B. Riddlesdown; Sanderstead, local, 1922; R.W.R. Box Hill, 1925, J.E.L.; Hb.L. Headley, 1939, P.H.C.; Hb.L.N.H.S. Wimbledon Common, 1924, 1929 and 1933; C.A. Riverside waste, Kew, 1943-44; B.W. V.-c. 21. Near Harefield, 1907, J.E.C.; Hb.Mus.Brit.; 1909, C.S.N.; Hb.L.N.H.S.; 1910-17; J.E.C.; 1948, F.E.W.; Hb.K. Hampton Court, 1910, P.H.C.; Hb.L.N.H.S.; 1913; L.J.T.; 1939-53; D.H.K.

N. GRANDIFLORA Bieb. Alien. Caucasus. V.-c. 21. Uxbridge, A.L.; Hb.D.

GLECHOMA L.

G. HEDERACEA L., NEPETA HEDERACEA (L.) Trev., N. GLECHOMA Benth. *Ground Ivy*. Woods, banks and grassy waste places. Very common in all the v.-cc. A very large-flowered form, often bearing pink blossoms is reported from Mount's Wood and Darenth; F.R.

DRACOCEPHALUM L.

D. PARVIFLORUM Nutt. Alien. N. America. V.-c. 18. Rubbish-tip, East Ham, 1951, J.E.L., B.W. & J.Ru.; Hb.L.

SCUTELLARIA L.

S. GALERICULATA L. *Skull-cap*. Pond verges and stream- and riversides. Common throughout the area.

S. MINOR Huds. *Lesser Skull-cap*. Wet heathy places. Local. V.-c. 16. Pauls Cray Common; W.W. Keston Bog, 1921; E.B.B.; 1922 and 1925, J.E.L.; Hb.L. V.-c. 17. Oxshott Heath, 1899, L.B.H.; Hb.H. Arbrook Common, 1910; J.E.C. Reigate Heath, very local, 1921; Limpsfield Chart, 1925; R.W.R. Wimbledon Common; W.W.; 1929; C.P.C.; 1935; C.A.; 1936; E.B.Ba. Richmond Park, 1921; H.J.B.; quite common in several spots, 1937; C.L.C. Sheen Common, 1942; B.W. Weybridge, 1935; C.L.C. Ashtead Forest, 1934; H.J.B.; 1945; R.M.P. Bookham Common, 1940, P.H.C.; Hb.L.N.H.S. Ashtead Common, 1928, J.E.L.; Hb.L. V.-c. 21. Stanmore Common, 1894; Harrow Weald Common, 1913, C.S.N.; Hb.L.N.H.S.; seen in both places, 1939-53; Harefield, 1939; D.H.K. Ruislip Common; Copse Wood, Northwood, 1945; B.W. V.-c. 24. Black Park, 1944-50; D.H.K.

PRUNELLA L.

P. VULGARIS L. *Self-heal*. Meadows, pastures, grassy waste places and woodland rides, mainly on basic and neutral soils. Very common in all the v.-cc. Plants with white flowers are recorded from v.-c. 17. Bookham; P.H.C. Banstead Woods, 1924; C.L.W. Box Hill, 1925, J.E.L.; Hb.L. V.-c. 21. Wood N. of Harefield, 1944; D.H.K.

P. LACINIATA (L.) L. Dry grassy places on calcareous soils. Very rare. V.-c. 17. Rough field near Addington, 1936, *A.L.S.*; *Hb.L.* Down, E. side of Pebblehill Road, 1951; *C.D.O.** comm. *A.E.E.*

MELITTIS L.

M. MELISSOPHYLLUM L. Alien. Europe, including parts of Britain. V.-c. 21. Waste ground, Crouch Hill, N.8, 1952, *F.R.B.* det. at *Kew*.

SIDERITIS L.

S. ROMANA L. Alien. Europe. V.-c. 21. Hackney Marshes, 1927; *J.E.C.*

MARRUBIUM L.

M. VULGARE L. *White Horehound*. Alien. Europe, including parts of Britain. Established in waste places, and by roadsides. Rare. V.-c. 16. Maplescombe, on a rabbit-warren, 1923; *W.W.* V.-c. 17. Mortlake, 1913; *J.E.C.* Limpsfield, 1917; *R.W.R.* V.-c. 21. Muswell Hill, 1905; Yiewsley, 1911; Hackney Marshes, 1912 and 1918; Harlington, 1922; *J.E.C.* Disused gravel pit, Hanwell, c. 1932; Primrose Hill, 1949; *D.H.K.*

STACHYS L.

S. SYLVATICA L. *Hedge Woundwort*. Woods, hedgebanks and shady waste places. Common in all the v.-cc. The var. *IMMACULATA* Cutting. is recorded from v.-c. 17. Chipstead Valley Woods, 1927, *E.C.W.*; *Hb.L.*

S. PALUSTRIS L. *Marsh Woundwort*. Streamsides, ditches, marshes and pond verges, rarely in dry habitats. Common throughout the area. A very dry habitat for this species is reported from v.-c. 17. Corner of chalky field near Owl's Wood, Chelsham, 1943, *J.E.L.*; *Hb.L.*

×SYLVATICA = *S. × AMBIGUA* Sm. V.-c. 16. Westerham; *W.W.*; 1937; *P.H.C.* V.-c. 17. Chessington, 1929, *C.E.B.*; *Hb.L.* Bookham Common, 1953; *A.J.W.* conf. *A.M.* V.-c. 21. Harefield; Hadley Common; canal bank near Alperton, 1947; *D.H.K.*

S. ARvensis (L.) L. *Field Woundwort*. Arable fields on light sandy and gravelly soils. Local. V.-c. 16. Force Green, 1932; *B.T.W.* Sundridge, 1943, *J.E.L.*; *Hb.L.* V.-c. 17. Allotments, Paine's Hill, Limpsfield, 1921; *R.W.R.* Fields E. of Claygate, 1944, *J.E.L.*; *Hb.L.* Chipstead, 1952; *L.N.H.S. Excursion*. V.-c. 18. Hainault, 1913; *P.H.C.* V.-c. 21. Hendon, 1912, *P.H.C.*; *Hb.L.N.H.S.* Stanwell Moor, 1913, *J.E.C.*; *Hb.Mus.Brit.* Grounds of Ashford County Hospital, a single plant, 1944; *J.K.H.* Rubbish-tip, Hounslow Heath, 1949; *A.W.W.* V.-c. 24. Iver, 1912, *P.H.C.*; *Hb.L.N.H.S.*; Lambourne Farm, 1931; *J.C.R.*

S. ANNUA (L.) L. Alien. Europe. V.-c. 17. Cultivated field, Merstham, 1943, *J.E.L.*; *Hb.L.* Rubbish-tip between Reigate Hill and Kingswood, 1950, *B.W.* & *B.M.C.M.* det. *N.Y.S.* V.-c. 18. Woodford Green, 1905; *C.N.* V.-c. 21. Crouch End,

*Orton, C. D.

1897; Finchley, 1910; Yiewsley, 1912-14; Hackney Marshes, 1914; *J.E.C.* V.-c. 24. Near Uxbridge, 1912, *J.E.C.*; *Hb.Mus.Brit.*

S. RECTA L. Alien. Europe. V.-c. 18. Chigwell, 1907; *C.N.*

BETONICA L.

B. OFFICINALIS L., *STACHYS OFFICINALIS* (L.) Trev., *S. BETONICA* Benth. *Betony*. Open woods, hedgebanks, grasslands and heaths on non-calcareous soils. Common in all the v.-cc.

GALEOPSIS L.

G. SPECIOSA Mill. *Large-flowered Hemp-nettle*. Cultivated ground. Rare. V.-c. 16. Gravel pit S. of Central Park, Dartford; by Roman Villa, Darenth; E. boundary of Swanscombe Wood, 1948-50; *H.M.P.* V.-c. 17. Cornfield near Kingswood railway station, 1950, *J.E.L.* & *C.T.P.*; *Hb.L.* V.-c. 21. Hackney Marshes, 1924, *J.E.C.*; *Hb.Mus.Brit.* Crouch End, 1950; *F.R.B.* Woodside Road, Northwood, 1950; *R.A.G.*

G. TETRAHIT L. agg. *Common Hemp-nettle*. Cultivated and waste ground, heaths, woods and roadsides. Common, and widely distributed; recorded from all the v.-cc. except 19. The var. *NIGRICANS* Bréb. is recorded from v.-c. 17. Limpsfield Chart, 1917; *R.W.R.* V.-c. 20. Broxbourne, 1924; *E.B.B.*

G. BIFIDA Boenn., *G. TETRAHIT* var. *BIFIDA* (Boenn.) Lej. & Court. In similar situations to the aggregate species. Probably common, but distribution imperfectly known. V.-c. 16. Holwood Park; *W.W.* V.-c. 17. Burgh Heath, 1928, *C.E.B.*; *Hb.L.*

G. LADANUM L., including *G. ANGUSTIFOLIA* Hoffm. *Narrow-leaved Hemp-nettle*. Cultivated and waste ground, especially on the chalk. Local. V.-c. 16. Pauls Cray and Keston Commons; *W.W.* Stone Village, 1947; *H.M.P.* Cornfield, Downe, 1948; *J.B.M.* V.-c. 17. Near Caterham, 1899-1901; *J.E.C.* Near Chipstead, 1901; *L.B.H.* Near Oxted, 1899, *L.B.H.*; *Hb.H.* Above Limpsfield, 1921; *R.W.R.* Near Featherbed Lane, Addington, 1924 and 1941; near Headley, 1926; Hallelu Valley, Warlingham, 1927; near No Home Farm, Epsom, 1929; chalky field, near Thirty Acre Barn, Ashtead, 1943, *J.E.L.*; *Hb.L.* Near Ashtead, 1948; *J.B.E.* Walton-on-the-Hill; Norbury Park, 1940, *P.H.C.*; *Hb.L.N.H.S.* Fetcham, 1948; *B.W.* Cornfield, Sanderstead, 1950; *R.M.P.* Pebblecombe, 1952; *J.E.L.* V.-c. 18. Woodford Green, 1905; Epping Forest, 1895, *E.L.S.*; *Hb.L.N.H.S.* V.-c. 21. Hendon, 1913; Muswell Hill, 1900; *J.E.C.*; 1910; Finchley, 1910; Yiewsley, 1910-12, *J.E.C.*; *Hb.Mus.Brit.* V.-c. 24. Uxbridge, 1910-12; near Iver, 1911, *J.E.C.*; *Hb.Mus.Brit.*

LEONURUS L.

L. CARDIACA L. *Motherwort*. Alien. Europe. V.-c. 17. By Thames Towing-path between Kew and Richmond, near Kew Bridge, 1943-45; *B.W.*; and opposite Syon House, a single large plant, 1949-50; *R.A.B.* & *B.W.* Edge of vegetable

garden, Wandsworth, 1938; *J.Cr.** Bomb-crater, Brockham Hill, 1948, *J.E.L.*; *Hb.L.* V.-c. 21. Hendon, 1907; *J.E.C.*

LAMIUM L.

L. ALBUM L. *White Dead-nettle*. Ditches, river banks, hedgebanks, roadsides and waste places. Common throughout the area.

L. MACULATUM L. *Spotted Dead-nettle*. Alien. Europe. Garden escape. Naturalised in woods, and grassy places, and on banks. Not common. V.-c. 16. By path in Abbey Woods, 1948; *R.A.B.* V.-c. 17. Chipstead, 1901, *L.B.H.*; *Hb.H.* Earlswood, two places, 1951; *B.M.C.M.* Wimbledon Common, several places near houses, 1952; *A.W.J.* V.-c. 18. Shady lane, Lambourne End, far from houses, 1952; *A.W.J.* White-flowered plants are recorded from v.-c. 17. Wimbledon Common, 1951-52; *A.W.J.*

L. PURPUREUM L. *Red Dead-nettle*. Cultivated and waste ground, banks and roadsides. Very common in all the v.-cc. Plants with white flowers are reported from v.-c. 16. Abbey Wood, garden weed, 1913, *J.E.Gr.*; *Hb.B.* V.-c. 17. Weybridge, 1919; *E.B.B.* Mitcham Common, 1922, *J.E.L.*; *Hb.L.* Ham pits, 1950; *B.W.* Reigate Heath, 1953; *B.M.C.M.* & *B.W.* V.-c. 18. Ongar; *B.T.W.* V.-c. 21. Waste ground, Hanwell, 1940-45; *D.H.K.*

L. HYBRIDUM Vill., **L. INCISUM** Willd., **L. DISSECTUM** With. *Cut-leaved Dead-nettle*. Cultivated and waste ground, walls, and roadsides on light soils. Local. V.-c. 16. New Eltham; Holwood Park; near Orpington; Nash, S.W. of Keston; *W.W.* Keston, 1922, *J.E.L.*; *Hb.L.* V.-c. 17. Wall near Thorpe Church, 1919, *E.B.B.*; *Hb.B.* Near Oxted Church, 1925; fields W. of Godstone, 1931; *R.W.R.* Hallelu Valley, Warlingham, 1925, *J.E.L.*; roadside, Tadworth, 1925, *E.C.W.*; Thames Ditton, 1931, *J.Fr.*; *Hb.L.* Roadside, Hook, 1952; Molesey Hurst, 1953, *B.W.*; *Hb.W.* Betchworth station, 1950; *B.W.* V.-c. 21. Near Uxbridge; *D.H.K.* Grounds of Hampton Grammar School, 1950; *A.W.W.* V.-c. 24. Near Langley, 1911, *C.S.N.*; *Hb.L.N.H.S.* Lambourne Farm, Iver, 1931; *J.C.R.* The var. *DECIPiens* (Sond.) Rouy is recorded from v.-c. 16. Bromley, 1920; *P.H.C.*

L. MOLUCELLIFOLIUM Fries, **L. INTERMEDIUM** Fries. *Intermediate Dead-nettle*. Alien. N. Europe, including parts of Britain. V.-c. 21. Hackney Marshes, 1924. *J.E.C.*; *Hb.Mus.Brit.* det. *A.M.* & *E.B.Ba.*

L. AMPLEXICAULE L. *Henbit Dead-nettle*. Cultivated ground and roadsides on light dry soils. Locally abundant. V.-c. 16. Chislehurst; *W.W.* Near Darenth, 1914; *E.B.B.* Near Southfleet, 1919; Chelsfield, 1930; *P.H.C.* Near Westerham, local, 1924; *R.W.R.* West Wickham,

*Crabbe, J.

1926, *J.E.L.*; *Hb.L.* Joyden's Wood, Bexley, 1938, *P.H.C.*; *Hb.L.N.H.S.* Stone; *H.M.P.* N. of Dartford, 1945; *F.R.* V.-c. 17. Near Weybridge, 1922; field between Teddington Lock and Ham, 1924; Ham Common, 1927; *E.B.B.* Richmond; Kingston, 1931; *P.H.C.* Molesey; Kew Gardens, 1945; *B.W.* Mitcham Common, 1931, *J.E.L.*; *Hb.L.*; 1936; *P.H.C.* Between Ewell and Chessington, 1919; *L.J.T.* Mickleham, 1919, *E.B.B.*; *Hb.B.* Limpsfield, local, 1919; *R.W.R.* Epsom College, 1952; *A.E.E.* V.-c. 18. Grays, 1904; *J.E.C.* Hale End; *R.W.R.* Dagenham, 1913, *P.H.C.*; *Hb.L.N.H.S.* Stifford; South Ockenden; *P.H.C.* Chigwell Lane railway station, 1920; *L.J.T.* V.-c. 20. Rye House, 1910; Bushey, 1909, *P.H.C.*; *Hb.L.N.H.S.* Watford; Rickmansworth; *C.S.N.* V.-c. 21. Potters Bar; Southall; *P.H.C.* Wall near Bedfont Church, 1919; *E.B.B.* S. of Harefield, 1922; *L.J.T.* Yiewsley, 1916; *J.E.C.* Staines; Ashford; Harmondsworth; Isleworth; St. Margaret's; Syon Park; Hanwell; near Southall; Chiswick; Willesden Green, 1938-53; *D.H.K.* Heath Road, Hounslow, 1945; *A.W.W.* V.-c. 24. W. of Uxbridge, 1922; *L.J.T.*

GALEOBDOLON Adans.

G. LUTEUM Huds., *LAMIUM GALEOBDOLON* (L.) L. *Archangel*, *Yellow Dead-nettle*. Woods and shady hedgebanks. Locally abundant, especially on the chalk. V.-cc. 16 and 17. Frequent on the chalk. V.-c. 18. Woodhatch; *C.S.N.* Near Sewardstone; *C.N.* High Beach; *W.E.G.* Warley; Navestock, 1902; *R.W.R.*; 1926; *B.T.W.* Loughton, 1953; *R.M.P.* V.-c. 19. Nazeing Long Green, 1906; *S.A.* Galley Wood, 1909, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 20. Totteridge Green; near Munden Park, 1909; *C.S.N.* Arkley, 1901; *L.B.H.* Radlett, 1909, *C.S.N.*; *Hb.L.N.H.S.* North Mimms, 1921; *L.J.T.* Wormley West End; *C.S.N.* Broxbourne; *P.H.C.* Rickmansworth, 1939-53; *D.H.K.* Bayford, 1953; *R.M.P.* V.-c. 21. Harefield, 1928; *H.S.*; 1938-53; *D.H.K.* Highgate Woods; Finchley; Hampstead Heath; Mimms Hall Wood; *C.S.N.*; 1946; Springwell; Scratch Wood; Perivale Wood, 1939-50; *D.H.K.* Park Wood, Ruislip, 1945; *B.W.* Whitewebbs Park, Enfield; *L.J.J.* V.-c. 24. Denham, 1934; *P.H.C.*; 1949; *D.H.K.*

BALLOTA L.

B. NIGRA L. *Black Horehound*. Hedgebanks, roadsides and waste ground. Very common in all the v.-cc. White-flowered plants are recorded from v.-c. 16. Eynsford, 1929; *R.W.R.* Otford, 1945, *P.H.C.*; *Hb.L.N.H.S.* Cotton Lane, Stone, 1948-50; *H.M.P.* V.-c. 17. Towing path near Kew, 1925, *J.E.L.*; *Hb.L.* V.-c. 21. Yiewsley, 1920; *J.E.C.* waste ground, Chiswick, 1938, *J.E.L.*; *Hb.L.*; 1939-51; Hanwell, 1944-53; canal bank S. of Uxbridge, 1949; *D.H.K.*

B. HISPANICA (L.) Benth., *B. ACUTA* Briq. Alien. S. Europe. V.-c. 17. Bomb-crater, Brockham Hill, 1948, *J.E.L.*; *Hb.L.*; 1949; *J.E.L.*



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Map of the Society's Area, 1s.

"LONDON NATURALIST" REPRINTS.

Note.—Dates in brackets refer to issue of L.N. and are not dates of publication.

21, 22, 25, 30. **Survey of Limpsfield Common**: 1939, 6d; 1940, 3d; 1942, 3d; 1943, 2d.

24. **Randolph William Robbins (1871-1941)**, (1941), 6d.

29, 33, 35, 44, 46, 51, 60, 67, 71, 75, 81. **Survey of Bookham Common**: 2, 1943, with maps, 4d; 3, 1944, with map, 9d; 4, 1945, 6d; 5, 1946, with map, 9d; 6, 1947, 1s; 7, 1948, 1s; 8, 1949, 2s; 9, 1950, 1s 6d; 10, 1951, 1s 6d; 11, 1952, 1s 6d; 12, 1953, 1s 6d.

34, 36, 45, 47, 52. **Epping Forest Survey**: 3, 1944, with maps, 9d; 4, 1945, 6d; 5, 1946, 6d; 6, 1947, with map, 9d; 7, 1948, 1s.

34a. **Docks and Sorrels of the London Area**, by J. E. Lousley (1944), 6d.

37. **William Curtis (1746-1799)**, by J. E. Lousley (1945), 6d.

38. **Neuroptera of the Home Counties**, by E. B. Pinniger (1945), 6d.

41. **Notes on the Flora of Middlesex**, by Douglas H. Kent (1946), 6d.

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48. **Hymenoptera Aculeata of Hampstead Heath** (with map), by K. M. Guichard and I. H. H. Yarrow (1947), 1s 6d.

49, 61, 68, 72, 76, 82. **City Bombed Sites Survey**: 1947, 6d; (1948 O.P.), 1949, 6d; 1950, 6d; 1951, 6d; 1952, 6d; 1953, 9d.

50. **Middlesex Plant Records**, 1947, by D. H. Kent, 9d.

55. **The Story of our Society**, by L. G. Payne (Part I, 1947, Part II, 1948), 1s 6d.

56. **Ecological Aims and Methods for Zoologists**, by Dr O. W. Richards (1948), 6d.

57. **Check-list of the Mammals, Reptiles, and Amphibia of the London Area**, by R. S. R. Fitter (1948), 1s.

66. **Mammals, etc., of the London Area, Additional Records**, by R. S. R. Fitter (1949), 9d.

62. **Butterflies of the London Area**, by C. G. M. de Worms (1949), 1s 6d.

63, 69. **Report on the Temporary Geological Sections** (1949), 1s; (1950), 2s.

64. **Kent Plant Records**, by F. Rose (1949), 9d.

65. **Hepaticas of the London Area**, by R. A. Boniface (1949), 9d.

70, 73, 77, 83. **Hand List of the Plants of the London Area**, by D. H. Kent and J. E. Lousley, Part I (1950), 2s 6d; Part II (1951), 2s 6d; Part III (1952), 2s 6d; Part IV (1953), 2s 6d.

74. **The Flies of the London Area, I, Conopidae**, by L. Parmenter (1951), 6d.

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85. **Post-war Progress in Nature Conservation in the London Area**, by C. P. Castell (1953). 1s.

"LONDON NATURALIST" REPRINTS (Contd.).

The Life of A. W. Bacot, by Prof. Major Greenwood (1924) (ex Journal of Hygiene), 6d.

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THE Society is an amalgamation of the City of London Entomological and Natural History Society, founded in 1858, and the North London Natural History Society, founded in 1892.

Meetings are held on Tuesday evenings, either at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1, or at the Linnean Society's rooms, Burlington House, Piccadilly, W.1. The half-yearly Programme should be consulted as to the venue of any particular meeting. The room is open from 6 p.m. to 9 p.m., and meetings begin punctually at 6.30 p.m. and end about 8.30 p.m., unless other arrangements are announced. The Library and Collections are available to members at the Royal Society for the Protection of Birds headquarters, 25 Eccleston Sq., S.W.1, from 6 p.m. to 8 p.m. on the second Monday and fourth Thursday in each month.

At all indoor meetings specimens of Natural History interest are exhibited, and papers on various subjects are read and discussed. Visitors may be introduced by members of the Society, and are cordially welcome. Frequent field meetings are held at week-ends, particulars of which are contained in the Programme.

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Further information and Programme may be obtained from the General Secretary:—**H. A. TOOMBS, Dept. of Geology, British Museum (Natural History), Cromwell Road, S.W.7.**

